SOLID WASTE PROGRAM
INTERNAL ROUTING SLIP

NAME	DATE
Jon Dilliard	JD 11/12/98
F. (Pat) Crowley	
Rick Thompson	
Ken Kapsi	
Pat Potts	
Carol Utick	
Cathy Rudolf	
Mark Smith (Steger)	MSS 11/18/98
Nancy Davis	
Vacant Lic.	
Vacant Reg.	

JUNK VEHICLE
INTERNAL ROUTING SLIP

NAME	DATE
Darrell Stankey	
Bruce Meyer	
Vacant	

MISC / NOTES:
File: Helena
CMA and
METhane

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Hydrometrics, Inc.
consulting scientists, engineers & contractors

2727 Airport Road
Helena, MT 59601
(406) 443-4150
Fax: (406) 443-4155 or
(406) 443-1252
www.hydrometrics.com

November 9, 1998

RECEIVED
NOV 10 1998
MONTANA
DEPT. OF ENVIRONMENTAL QUALITY
COMMUNITY SERVICES BUREAU

Kim Milburn
Public Works Director
City of Helena
316 North Park Ave.
Helena, MT 59623

Dear Kim:

This letter is to transmit the minutes of the October 28, 1998 meeting between the City of Helena and the Montana Department of Environmental Quality (MDEQ) in regards to the City of Helena landfill methane and groundwater remediation.

Attending: Kim Milburn, City of Helena
Janet Pallister, City of Helena
Shelly Laine, City of Helena
Larry Kurokawa, City of Helena
Rich Lynd, City of Helena
Pat Crowley, MDEQ
Bill Thompson, Hydrometrics
Mike Wignot, Hydrometrics
Jodi Bingham, Hydrometrics

EXISTING YMCA GAS EXTRACTION SYSTEM

- Jodi Bingham gave an update of the existing YMCA gas extraction system.
  - Hydrometrics is currently optimizing flows in gas extraction wells EW-3, EW-4 and EW-5 to try to reduce methane levels to below the LEL (5% methane) in monitoring probes HL-9 and HL-10.
  - Methane levels in probe HL-18 have been below the LEL for the last month.
  - Methane levels in HL-10 recently dropped below the LEL for several days but have since drifted back up above the LEL. Maintaining levels below the LEL in HL-10 should be achievable through extraction well flow optimization.
  - Decreases in the methane levels in HL-9 have been seen, but levels have not yet dropped below the LEL.

- Pat Crowley discussed the results of his search for the exact compliance boundary at the YMCA.
  - Phase I of the old landfill was never licensed by the State of Montana. Records only mention the lease from Burlington Northern for Phase II in the State license.
  - Pat is content with the current monitoring of the existing extraction system monitoring probes and suggested that the continuation of current efforts to protect the YMCA is sufficient to meet the requirements of the State.

PROPOSED CARROLL COLLEGE GAS EXTRACTION SYSTEM

- Kim Milburn indicated that the City has been working with Carroll College to try to resolve their differences. Negotiations are continuing.
- It is Kim's goal to start the system design in January of 1999 and complete construction during this fiscal year.
- Kim indicated that the landfill is one of his top three priorities.

GROUNDWATER REMEDIATION

- Alternatives for groundwater remediation included existing corrective measures, air sparging and groundwater extraction.

Existing Corrective Measures

- Jodi Bingham presented evidence of significant improvements in the groundwater quality since the implementation of the existing corrective measures.
- The aerial extent of the PCE plume, the only VOC above the MCL (5 ppb) at the compliance boundary, does not appear to be increasing significantly with time and concentrations are generally decreasing.
- Concentrations of PCE are still increasing in downgradient well 5 (up to 2.7 ppb), but this is expected due to the time required for groundwater and subsequent contamination to travel from the landfill to well 5. This and other private wells north of Custer Avenue will be monitored closely and carbon canisters or city water will be supplied to those homes deemed to be at risk of exceeding the MCL.

Air Sparging

- Jodi Bingham presented information concerning air sparging as a possible groundwater remediation alternative.
- Although the contaminants themselves are very volatile and would be amenable to sparging, well logs indicate the geology on the north edge of the landfill is highly variable with layers containing a high percentage of fines (low permeability). As air sparging is particularly sensitive to soil heterogeneity (overlying layers of lower permeability), the effectiveness of an air sparging system is questionable.
- It is apparent that any design would be highly dependent upon field conditions.

Groundwater Extraction

- Bill Thompson presented the results of his groundwater model of the Helena landfill and affected downgradient areas.
- The model was able to duplicate the existing potentiometric surface with the exception of a few points (beneath the MPC building and I-1). The east/west path of the water particles is particularly sensitive to the amount of recharge added at the storm drain outfall.
- From the model, it would appear that the golf course irrigation wells are already capturing the eastern half of the plume and are responsible for the improved groundwater quality downgradient of these wells.
- A combination of three pumping wells on the northwest boundary of the landfill (pumping ~20 gpm) and one pumping well on the northeast boundary of the landfill (pumping ~5 gpm) are sufficient to capture all particles leaving the landfill when pumped continuously.
- When this same combination of wells is pumped 180 days of the year, approximately 75% of the water particles are captured with the majority of the remaining particles headed for I-4. It is expected that with the increased mixing and aeration caused by the seasonal pumping, compliance could be achieved in wells MPC-1 and HL-90-1 pumping only 6 months of the year.
- A phased approach was recommended beginning with the seasonal pumping of the four proposed pumping wells. Several additional scenarios could be implemented secondarily if required to achieve compliance.
- Mike Wignot inquired as to whether just extracting the west half of the plume would be sufficient since the golf course irrigation wells already catch the eastern half. Pat Crowley indicated that in order to achieve compliance in HL-90-1, he would prefer to pump the three wells upgradient of the compliance well.

Bill Thompson indicated that the proposed pumping wells may have an effect on the capacity of the golf course irrigation wells; however, it is expected that these effects would be minimal and Rich Lynd of the City of Helena concurred.

- Rich Lynd also questioned the effects of the City installing irrigation wells in Northwest Park south of Capital High School. It was agreed that this could speed the remediation of the northwestern portion of the plume but would not affect the design of the pumping system.
- Pat Crowley indicated that he thought this approach to groundwater remediation was heading in the right direction and the model was money well spent.

SCHEDULE

- For the Carroll College gas extraction system, the property issues will be settled as soon as possible with the intention to complete the design this winter and construction by next summer.
- For the groundwater remediation, the next step includes a meeting with the City Commission to present the alternatives, discuss the fiscal implications, and select a remedial alternative. As the commission has a full calendar, the schedule will be determined by the first available opening. Pat Crowley will check with the MDEQ legal department to determine the appropriate documentation required to comply with the Corrective Measures Assessment and to see if another public meeting needs to be held. After the City agrees on the new remedial alternative, Hydrometrics will prepare a report with the preferred alternative and a concrete plan for implementation. This plan will then be presented to MDEQ for review and approval. Final design and construction will follow MDEQ approval.

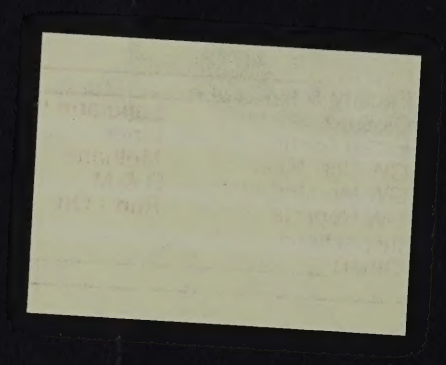
If you have any questions or comments concerning this summary, please feel free to call me.

Sincerely,

Jodi Bingham, E.I.
Environmental Engineer/Chemist

c: Ted Hill, City of Helena
Janet Pallister, City of Helena
Shelly Laine, City of Helena
Larry Kurokawa, City of Helena
Rich Lynd, City of Helena
Pat Crowley, MDEQ
Bill Thompson, Hydrometrics
Mike Wignot, Hydrometrics

County: L+C	
Facility & #: Helena 90	
Closure	Landfarm
Finan Assur	Liner
GW Corr Meas	Methane
GW Monitoring	O & M
GW Reports	Run - On
Inspections	
Other: Corrective Measures Assessment.	



File: Helena
I.A.
1) Methane
2) Corr. Measures
3) Admin. Order. (new)

City of Helena
316 N. Park Avenue
Helena, Montana 59623

RECEIVED
APR 01 1998
MONTANA
DEPT. OF ENVIRONMENTAL QUALITY
COMMUNITY SERVICES BUREAU

March 30, 1998

Mr. Pat Crowley
MDEQ - Permitting and Compliance Division
Community Services Bureau
P.O. Box 200901
Helena, MT 59620

Dear Pat,

This letter has been prepared in response to your letter of March 12, 1998, regarding Financial Assurance for Corrective Measures, and to other concerns which you mentioned in our meeting last Wednesday. In our meeting, we agreed to the following:

- The City will submit a corrective measures cost estimate and financial assurance information, which will include cost for a landfill gas extraction system covering the entire landfill. This estimate and financial assurance information will be available at our first Wednesday meeting (April 1, 1998 at 9:00 a.m.).

- Final design, and determination of the size and location of further gas extraction is dependent on testing of the Phase I system, which should be operational in the next week. A two month testing phase has been proposed. After this testing period, the city proposes a meeting to discuss the scope and timeline for further design and implementation of gas extraction.

- The City will continue working on a technical and political resolution to methane migration and land-ownership issues on Carroll College property west of the landfill. The next step in this issue will be the presentation of construction cost estimates for several technical options at our meeting scheduled for Wednesday, April 1, 1998. The city is committed to implementing mitigative measures for methane migration west of the fill area during 1998.

In regard to the financial assurance cost estimates required by MDEQ. Initial cost estimates, which the city believed covered environmental monitoring, post-closure care, and corrective measures selected was submitted to MDEQ in Spring of 1997. The MDEQ responded to this submittal in a two letters dated November 7 and 10, 1998. The first of these letters requested additional information on environmental monitoring costs, which were submitted by the City. As your letter stated, costs for corrective measures are to be submitted within 120 days of

selecting a remedy. At no time has the City considered anything past the Phase I system which is installed at the YMCA, a **selected** remedy.

As no further remedy has been "selected," the City does not consider themselves to be negligent in providing the department financial assurance information. However, the City has agreed to provide you the enclosed financial assurance information to provide the Department with assurance that the City is able to finance a "full-scale" gas extraction system if necessary. This cost estimate is assumed to include adequate cost to globally encompass the Phase I system installed; mitigation of methane migration to near Carroll College, which we are committed to, and any additional gas extraction which may be required to control migration and/or address groundwater concerns.

A global gas extraction system addressing all of the landfill (Phase I, II and III) is well beyond the scope of gas extraction discussed in the corrective measures study. The City does recognize that MDEQ considers the Phase I system too small to adequately address groundwater concerns at the site. However, the two month test period will allow us to determine the area of landfill which will be influenced by the system and make decisions regarding the scope of further corrective actions.

I would also like to comment regarding your assertion during our meeting that the City has ignored methane migration from the west edge of the fill area. While it is true that the City realizes that migration in this area has occurred for some time, we have discussed the issue numerous times with MDEQ. Because of the apparent barrier to significant migration and the distance to buildings on this side of the landfill, it has been the City's position, and we thought MDEQ's that this area would be addressed after the Phase I work is completed, in recognition of fiscal concerns. With Carroll's desire to do construction in this area, we realize that it is important to now make this mitigation system a priority, which is why we have performed the investigation of methane migration and fill depth in this area and developed potential mitigation alternatives.

With regard to the corrective measures for groundwater, we maintain a position that the City has developed the appropriate response, considering the scope of the problem. While it is apparent that the landfill has contributed constituents to groundwater in the area, it is important to consider the scope of the problem and potential for risk to human health and the environment, in developing corrective alternatives. The departments regulations ARM 17.50.710 states the department may determine that remediation of groundwater is not necessary:

- If the constituent(s) present in ground water is not currently or reasonably expected to be a source of drinking water: and is not hydraulically connected with waters to which the hazardous constituents are migrating or are likely to migrate in a concentration(s) that would exceed the ground water protection standards.., or

- If the ground water is additionally contaminated by substances that have originated from another source other than (the landfill) and those substances are present in concentrations such that cleanup of the release from the disposal unit would provide no significant reduction in risk to actual or potential receptors.

Owners in the area in which the groundwater plume extends at concentrations exceeding the groundwater protection standards are prohibited by statute from installing wells for potable use. Years of data have shown that the constituents attributable to the landfill present in groundwater are not likely to migrate to any area used as drinking water at a concentration exceeding the ground water protection standards. Past data also show the tetrachloroethylene concentrations in groundwater from other nearby source(s) are at levels which exceed the groundwater protection standard. In light of these issues we continue to maintain that any cleanup activities would not significantly reduce risk to human health or the environment (because little risk is present), and that the department has the responsibility to consider the cost versus benefit of any corrective measure.

We hope that the commitments which we have presented in this letter and in our meeting last week are consistent with what we discussed. We look forward to meeting with you this week and working together to provide the best resolution of your concerns.

Please call if you have any questions or need further information.

Sincerely,

Kim Millburn, P.E.
Public Works Manager

c: Mr. Ted Hill, City of Helena Environmental Engineer
Steve Downs, Hydrometrics
Dennis M. Taylor, City Manager
David Nielsen, City Attorney
Shelly Laine, Administrative Services Director

County Lewis + Clark
Facility & # Helena 90

Closure	Landfarm
Finan Assur	Liner
GW Corr Meas	Methane
GW Monitoring	O & M
GW Reports	Run - On
Inspections	

Other: Corrective Measures Assessment

2-5

DEPARTMENT OF ENVIRONMENTAL QUALITY
PERMITTING & COMPLIANCE DIVISION
WASTE MANAGEMENT SECTION
MARC RACICOT, GOVERNOR
Metcalf Building
STATE OF MONTANA
Phone: (406)444-4400
Fax: (406)444-1374
PO Box 200901
Helena, MT 59620-0901

August 4, 1997

Kim Milburn
Director of Public Works
City of Helena
316 North Park Avenue
Helena, MT 59623

Dear Kim:

Please proceed with Phases 1 and 2 of the Helena Landfill Gas Extraction Plan. This needs to be implemented as soon as possible, with the bid advertisement no later than August 15, 1997. Gas extraction must commence prior to December 31, 1997. An air quality permit may be needed for the discharge of gas to the atmosphere, the operation of a flare, or the use of landfill gas as boiler fuel. Please contact David Klemp of the Air and Hazardous Waste Bureau for permit conditions and requirements as soon as possible.

As we discussed in our meeting, the layout of the gas extraction system for the rest of the landfill should be coordinated with the park design. Evaluation of the gas production potential, re-design of the methane monitoring systems, investigations of the waste boundaries, and negotiations on land exchanges should proceed in a timely fashion. Areas that need particular emphasis, as we discussed, are the western edge of the landfill near Carroll College and the last area of waste deposition between the railroad tracks. All studies need to be presented to the Department as they are completed so we properly evaluate the proposed designs. We anticipate working closely with you and your consultants to provide appropriate advice and timely permit coordination.

While coordination with the park design is important, construction should not be delayed by the park plans, however. A design for the extraction system must be presented to the Department no later than April 1, 1998 and construction of the extraction system completed by October 1, 1998. This will allow the City to spread the cost over two fiscal years while maintaining a timely corrective action schedule. We understand that the City may not have sufficient funds for all of the recreation facility prior to the needed installation of the environmental protection systems, but the base grading, piping, and extraction systems should be installed prior to top dressing, surface facility construction, and grassing, in any event.

From the commencement of gas extraction, no later than October 1, 1998, the City will have two years to demonstrate the effectiveness of the gas extraction system as a remediation for the ground water contamination. This is consistent with what the Department has allowed other landfills in similar situations. If effectiveness with the ground water protection is not established by that time, the City may need to implement additional corrective measures.

I hope that this letter expresses our mutual agreement, based on our discussion of July 29, 1997. While specific deadlines were not discussed at the meeting, the dates in this letter are consistent with our discussions and are needed as "bright lines" for all of us. The Department's Enforcement Division monitors compliance activities to insure that we are providing timely, consistent activities throughout the Department and is tracking our performance on this action. The Waste Management Section staff will commit to timely plan reviews so that these deadlines can be achieved. We will have preliminary comments available within two weeks of any plan presentation to identify any fatal flaws or major obstacles.

You might contact Karen Fink of the City of Bozeman's Engineering Department (406-582-2382) about possible bidders as they have recently let a contract for their gas extraction system. We also have a copy of SWANA's Master Construction Specifications for Landfill Gas Conveyance Systems that we use as a reference when reviewing bid specs. We can lend you a copy if you need one.

Thank you for meeting with us. If you have any further questions on this matter, please feel free to contact me. My direct phone line is 406-444-5294.

Sincerely,

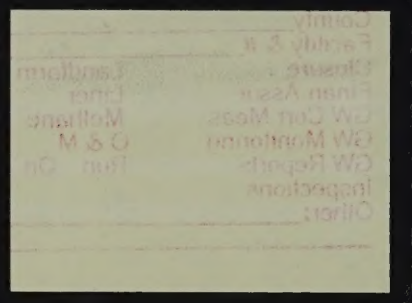
F. Patrick Crowley
Acting Section Head

cc: Jon Dilliard, DEQ
Jan Sensibaugh, DEQ
Troy McGee, Acting City Manager
Ted Hill, City Engineer
Carol Kirkland, Helena Parks Department
Steve Downs, Hydrometrics
Carl Thuesen, P.O. Box 22943, Billings, MT 59104

File:Helena Landfill\corrective measures and methane files

County Lewis & Clark
Facility & # Helena 90
Closure
Finan Assur
GW Corr Meas
GW Monitoring
GW Reports
Inspections
Other Corrective Measures Assessment
Landfarm
Liner
Methane
O & M
Run - On

2-5



Helena CMA
Methane

City of Helena
316 N. Park Avenue
Helena, Montana 59623

RECEIVED
JUL 0 3 1997
MONTANA
DEPT. OF ENVIRONMENTAL QUALITY
COMMUNITY SERVICES BUREAU

July 1, 1997

Mr. Pat Crowley
Montana Department of
Environmental Quality
P.O. Box 200901
Helena, MT 59620-0901

Dear Mr. Crowley:

This letter is in response to comments in your June 17, 1997 letter addressed to Ted Hill. Each of your comments has been reiterated in this letter followed by our response.

MDEQ COMMENT:

1) Landfill gas extraction was chosen as the preferred alternative in the Ground Water Corrective Measures Assessment (CMA). The system proposed in that document had a much larger areal extent than the current design. The current design will be unable to achieve the ground water protection desired because it does not extract gas from enough of the landfill. The extraction system ends far short of the most significantly impacted well (EPA - 1) and does not extend into the plume of ground water contamination. The minimum acceptable size for the system is as depicted on figure 3-1, of the February 1996 Addendum to the CMA.

RESPONSE:

The whole premise of collecting landfill gas to improve water quality is predicated upon the model that the landfill gas migrates away from the area in which it is generated, cools, and condenses on the water table and contaminates the groundwater. In order to be effective, the gas extraction system must collect the gas in the vadose zone near the source area, before it has a chance to migrate, cool and condense. While a vapor extraction system may be minimally effective in volatilizing these constituents from the dissolved phase as your comment suggests, extending the system to the apparent groundwater plume area would have minimal additional benefit if there is little gas available, or if the proposed system impacts the area already.

Based on Gas Control Engineering's extensive work on gas extraction sytstems, it is not unusual for extraction wells placed in waste to collect gas up to 600 feet away. While this may be optimistic in a shallow landfill such as the Helena landfill, the proposed gas extraction system will affect the majority of the Centennial Park area. The landfill gas system depicted in the Corrective Measures Assessment was conceptual only and based on relatively limited data. Methane monitoring in the past two years has

not indicated that a significant amount of gas is generated in the area around EPA-1. In fact no significant quantities of gas have been measured at EPA-1 or the two closest methane probes on the east edge of Centennial Park.

Page 3-3 of the Addendum to the Corrective Measures Assessment (CMA) states that "the actual location (spacing) of extraction wells, number of wells, and location of the treatment system will be presented when final design has been completed". Extending the extraction system to the very edges of the landfill as shown in conceptual form in the CMA would likely result in the recovery of little additional gas and may pose additional problems by inducing fresh air into the landfill.

It is not known exactly where the gas affecting water quality at EPA-1 originates, but monitoring data to date suggests that the highest concentrations of gas are located in the area addressed by the proposed extraction system. Because of concern in the park area near EPA-1, the Phase I design does include the installation of three extraction wells extending to this area. These wells will be installed as part of the Phase I construction. If monitoring of these wells suggests that significant quantities of gas exist in this area (and the Phase I system does not adequately influence this area), these wells can quickly be manifolded to the extraction system. However, the addition of these wells to the system (requiring significant disturbance of the landfill cap and park facility) without demonstrating that there is significant uncontrolled landfill gas in the area is not warranted.

In addition, the City feels that MDEQ should better consider the scope of the groundwater problem at the site. The amount of groundwater remediation necessary to achieve compliance is minimal. If you recall, only one constituent attributable to the landfill exceeds the groundwater standards required by MDEQ. This constituent (tetrachloroethene) is present north of the landfill at the compliance well (HL-90-1) at a level only slightly above the groundwater standard. Also as demonstrated by the CMA, there is little or no risk to the public or environment from groundwater contamination at the landfill. Tetrachloroethene levels exceeding the groundwater standard have never been detected in potable water sources downgradient from the landfill.

The vast majority of risk associated with the landfill is the potential for accumulation of landfill gas in nearby buildings and combustion or explosion of the gas. The proposed system addresses this risk, with the added benefit of groundwater remediation. Only a small improvement of water quality provided by the gas extraction system may result in compliance with water quality regulations.

MDEQ COMMENT:

2) No emissions estimate was provided for Phase 1 testing. It is impossible to determine if this unflared discharge to the atmosphere is permissible without pumping rates or non-methane organic compound (NMOC) concentrations. If

actual NMOC numbers were not obtained during last fall's testing, then EPA default numbers for landfill gas must be used to determine the pollutant discharge rate. If more than 25 tons of uncontrolled NMOCs will be discharged from the system on an annual basis, then an air quality permit is required and a best available control technology analysis completed to determine if the

proposed absorption canister would be acceptable.

RESPONSE:

This comment only pertains to those landfills subject to the new source performance standards with a design capacity of more than 2.5 million cubic meters. Based on the available data and extremely liberal estimates for depth of waste, no more than 1.98 million cubic meters of waste are landfilled at the Helena Landfill. Estimates based on actual waste weights recorded at the scale house are considerably less. This issue has been discussed with the air quality staff at MDEQ, and a design capacity report is being prepared as required by the rule.

Although the landfill is not subject to the new source performance standards, the air quality staff at MDEQ has asked that the city obtain an air quality permit for the emmission from the gas extraction system. NMOC data were obtained during the pilot test and will be used in the preparation of the permit. As discussed in the design submittal letter, air-quality permit personnel at the MDEQ have indicated that the temporary carbon treatment of NMOC's and direct venting of methane could be approved.

MDEQ COMMENT:

3) The schedule as presented does not comply with the schedule as presented to the public during the CMA process. The testing phase is too long. There is no justification presented for a delay of this magnitude. This design is already a year late based on the schedule presented to the public during the CMA process and approved by the department. According to ARM 17.50.511(1)(h)(iii) the City had 60 days to implement methane gas control measures after the detection above regulatory limits. Detection first occurred (after the effective date of the regulation, as the City has known for some time about gas problems at the landfill) September 20, 1994, nearly 3 years ago.

RESPONSE:

The testing phase does nothing to invalidate the effectiveness of the system. The system will be fully operational regardless of the length of this testing period, because the test concerns only treatment of the gas and not gas recovery. The purpose of this test is to gather data necessary to design the proper burner so that a beneficial use of the gas can be developed.

The city has already voluntarily implemented several gas control measures, including the extensive monitoring systems and the positive pressure system at the YMCA which has been operational since last year. It should be remembered that no regulatory concentrations of methane have been detected in this area. The facility's property boundary is located east of the YMCA and, while methane has been detected west of the YMCA, extensive monitoring of methane probes along the property boundary have not indicated that regulatory concentrations (100% of the lower explosive limit (LEL)) exist. In fact methane is rarely detected at all along the property boundary. In addition, concentrations of over 25% of the LEL have never been cofirmed in any buildings.

The only area in which an LEL level of methane exists at the property boundary is in the western portion of the landfill near Carroll College. This issue was discussed in several meetings with MDEQ, and it is the City's understanding that MDEQ agreed that because of the bedrock barrier to methane migration in this area, there was little risk. It is our understanding that continued monitoring after the installation of controls in the YMCA area would be necessary to determine if any further action was warranted. The City and Carroll College are currently discussing the transfer of property affected by the City's historical landfill operations, and these discussions will also influence future activities in this area.

The City is currently evaluating the potential for landfill gas to affect proposed athletic field construction at Carroll College. This evaluation will likely involve the installation of additional methane probes along the western property boundary of the landfill or within Carroll's property just west ofthe landfill. This evaluation will give the City and MDEQ a better understanding of the nature of LFG migration in this area.

MDEQ COMMENT:

4) The testing performed last fall does not seem adequate for design purposes. To quote the conclusions section of test report: "The test well was not placed in typical refuse and therefore is not representative of future wells installed in refuse,
especially in terms of radius of influence." No logs were provided for either the test well or the test probes. This may or may not be correct based on the thickness of the refuse. If this is insufficient to control gas migration and correct the ground water problems at the landfill, the density may have to increase or the system expanded.

RESPONSE:

While the test well was not installed in typical waste (it was installed in the old burning portion of the landfill), it did allow for evaluation of "worst case" design criteria. The test also provided valuable information on the quality of the gas, NMOC's and condensate quality. The test well was installed in its location because it was near the highest recorded methane levels and in an area where the testing would not interfere with activities at the YMCA. It was not known at that time that the burn dump extended to this area. This portion of the landfill consists of a soil-like fill composed of burned waste

which has decomposed into a silty matrix. This fill is likely much less permeable than most of the landfilled wastes. Because there is no information on how much area this portion of the landfill occupies, the design was intentionally very conservative, and the 100 foot spacing was chosen. Considering the close spacing of the wells and the pavement over much of the area in which the wells are installed, it is very unlikely that methane will migrate uncontrolled past the system and into the YMCA.

The City feels that it is prudent to begin with the Phase I installation as designed as soon as possible. It is agreed that if the migration of landfill gas cannot be controlled and groundwater problems persist at the landfill, that the system may need to be expanded.

With regards to your comments concerning closure activities of the landfill, the City submitted closure

quality assurance documentation in submittal dated April 7, 1997. This submittal was amended by additional financial assurance materials on May 5, 1997. This documentation was prepared by the City's engineering and administrative staff in response to previous correspondence as you referenced. It is our understanding that this submittal completes the closure activities at the landfill. The City has received no response from MDEQ regarding this submittal.

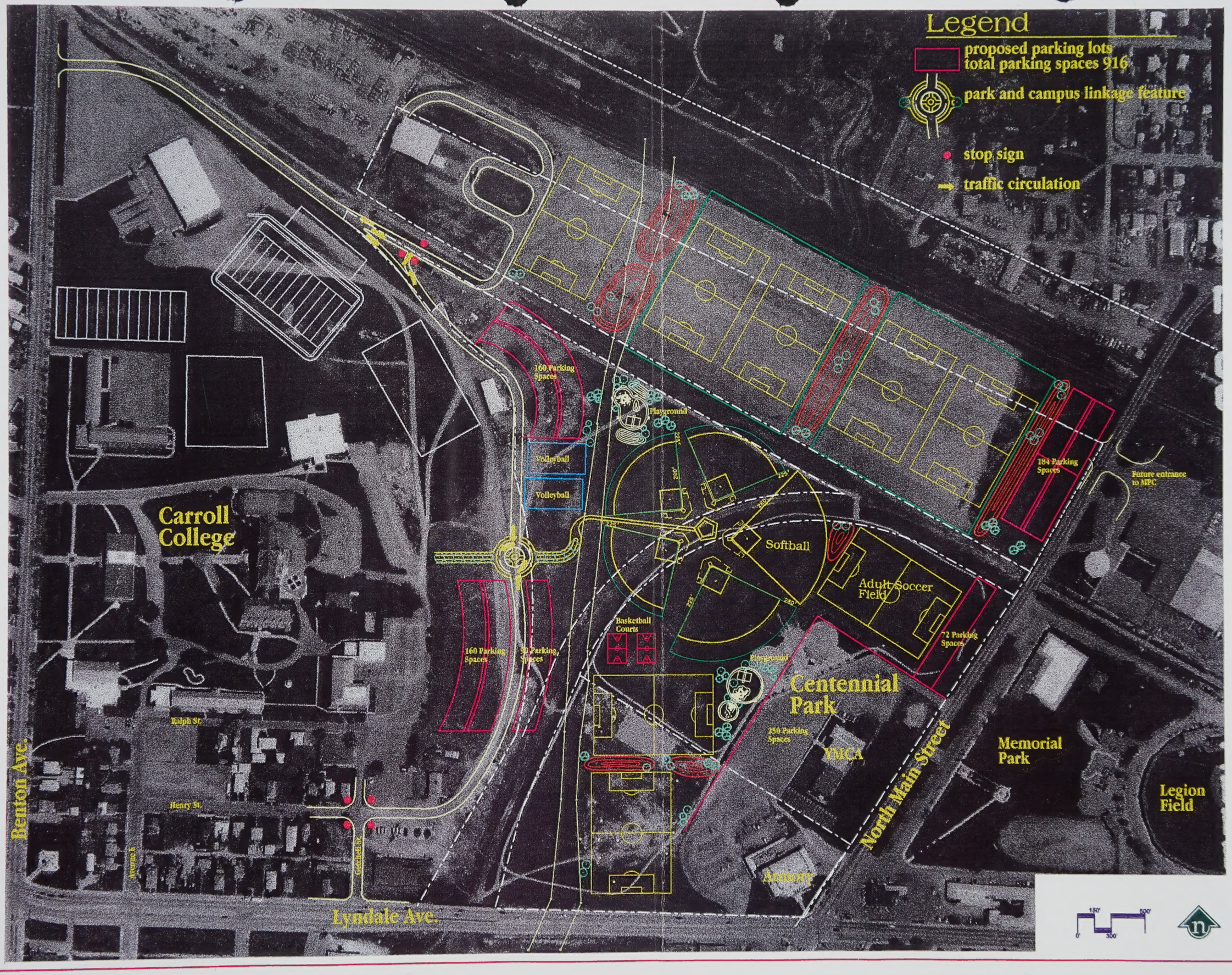
In closing, the City would like to express our concern that MDEQ's approach to this issue expressed in your June 17, 1997 letter, is contrary to the relationship which we have tried to develop during the past several years. While the City does acknowledge that the original "best guess" timeline on this project was unwittingly optimistic and has slipped we have worked continuously and diligently with MDEQ to come to what we believe is the appropriate and responsible solution for problems at our site. MDEQ was involved in preparing a Request for Proposals for the design of the landfill gas extraction system just last Fall. Numerous site visits by MDEQ personnel, as well as meetings and other correspondence, have kept MDEQ well apprised of the City's progress.

The City feels it would be appropriate to discuss these matters in person as soon as possible so that construction of the landfill gas extraction system can proceed. Please call and we will set up a meeting at your convenience.

Sincerely,

Kim Milburn, P.E.
City of Helena
Public Works Director

c: John Dilliard, MDEQ
Ted Hill, City of Helena
Steve Downs, Hydrometrics
Troy McGee, Acting City Manger



This drawing is the property of the Landscape Architect, & has been prepared specifically for this site and is not to be used for any other purpose, location, or Owner without written consent of the Landscape Architect.

Centennial Park Master Plan
Preliminary Master Plan

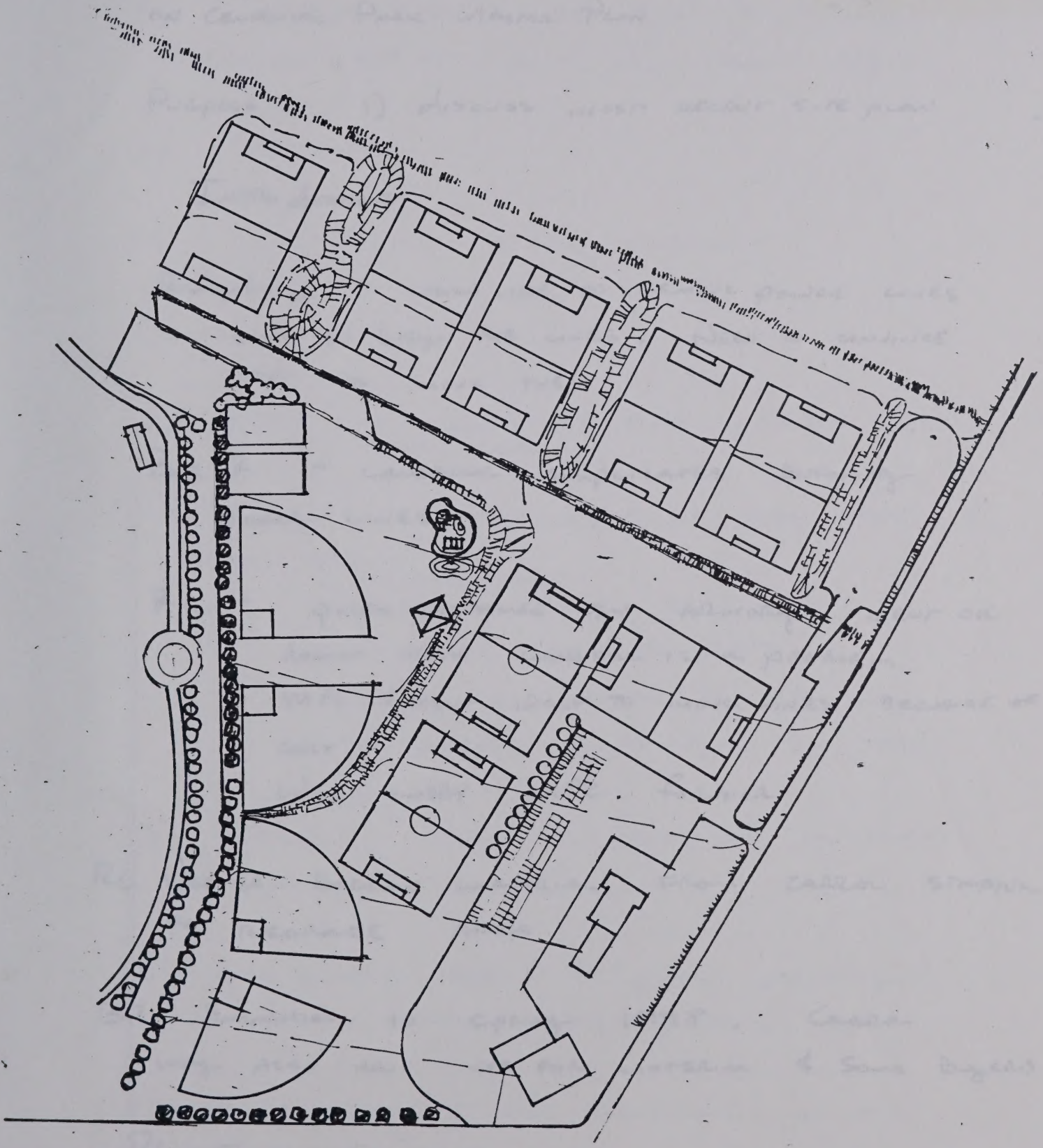
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GOLF COURSE ARCHITECTURE
LANDSCAPE ARCHITECTURE

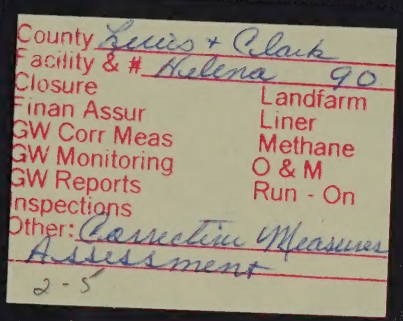
CARL THUESEN
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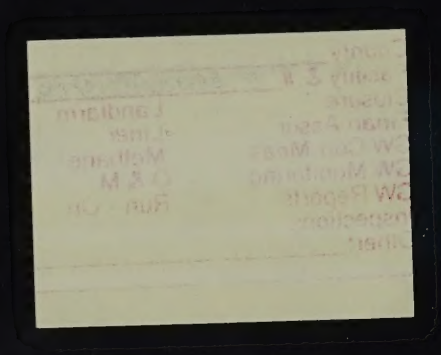
Drawn by: GSG
Date: 3/25/97
Checked by: CAT
Date: 4/24/97
Rev: 5/1/97
Rev: 6/19/97
CADD File: SHEET 5 MSTR PLANDWG

SHEET 5 OF 5

ALTERNATIVE LAYOUT FOR SOFTBALL FIELDS




County Lewis + Clark
Facility & # Helena 90
Closure
Finan Assur
GW Corr Meas
GW Monitoring
GW Reports
Inspections
Other: Corrective Measures Assessment
Landfarm
Liner
Methane
O & M
Run - On
2 - 5



Helena I.F.
CMA

Meeting Mac Butler Center 9/11/97
on Centennial Park Master Plan

Purpose 1) discuss most recent site plan

Introductions

Randy Line — would like to remove power lines move or bury the lines. Need to convince MPC to move them

Bob R — landfill complicates burying power lines.

R.L. — poles installed by Armory went ok
dorent think landfill is a problem
MPC doesnt want to move lines because of cost
Will lobby MPC further

RL Use of borrow material from Carroll Stadium to regrade area

BR Excavation in Spring 1998. Carroll may also have use for material & some buyers

RL East west spur

RL WOULD LIKE to USE FILL TO REGRADE SOCCER FIELDS to 2% from 4%

BR QUANTITIES

RL 75,000 yrds OF FILL NECESSARY

Questions

1) SOUTH END WONT BE FULLY graded yet CANT TOUCH CAP.

2) Timing? Development OF BALL FIELDS & SOCCER FIELDS
   - SOCCER FIELDS
   - SOFTBALL FIELDS REGRADE
   - Regrade CENTENIAL PARK

   10 years TOTAL TO do ALL.
   - Regrade SOUTH end OF PARK.

3) Restrooms? ON AN AREA NOT LANDFILLED PREVIOUSLY

4) move PUBLIC ROAD to PUBLIC PROPERTY & LET CARROL MAKE PARKING LOT

5) ALL SOCCER & ALL BASEBALL IN ONE LOCATION
   (ST) OPTION IS BOTH IN ONE LOCATION

6) TOURNAMENT LEO BERRY WOULD LIKE TOURNAMENTS TO COME HERE & BENFIT BUSINESS COMMUNITY

6 - 8 SOCCER FIELDS needed for STATE SOCCER TOURNAMENT.

20 FIELDS FOR REGIONAL TOURNAMENT, CARROL WOULD ALLOW THEIR FACILITIES TO BE USED.

HIGH SCHOOL needs

AA - 4-5 FIELDS SOCCER & SOFTBALL

WRRENT LAYOUT OK.

NORTHWEST PARK - doable project IN A SHORT TIME

COMMUNITY RESPONSE

- YOUTH SOCCER FIELDS OK
- NO LIGHTS

DISCUSSION OF SOFTBALL FIELDS AND SOCCER FIELDS

7) LAYOUT OF NORTHWEST PARK to REDUCE IMPACT OF FANS

8) Wells for sports facilities?

- City Attorney draft on wells for sports facilities

?? What if leachate is in sports field H_2O?

- City water is expensive

9) Leo Berry - Would like entire complex to be soccer,

Airport Development
water Federal Reserve well or effluent?
2-8 fields would reduce use of Centennial Park.

10) Focus on city tournaments, facilities
Serve community better.

Next mtg
Rm 326 City County Bld. 7:00 pm 9/17/97

INITIALS [redacted] DATE 6/12/97

SOLID WASTE OUTGOING CORRESPONDENCE ROUTE SLIP (ONLY)

☐ **NEW APPLICATION** — **Initial / Date**
- Rick T. _____
- Pat C. _____
- Nancy (Proof) _____
- Cathy _____
- Jon D. _____

☐ **NEW LICENSE** — **Initial / Date**
- Rick T. _____
- Pat C. _____
- Nancy (Proof) _____
- Carol _____
- Cathy _____
- Jon D. _____

☐ **HEALTH OFFICER CARD** — **Initial / Date**
- Rick T. _____
- Carol _____
- Cathy _____
- _____ _____

☐ **INSPECTIONS** — **Initial / Date**
- Pat C. _____
- Nancy (Proof) _____
- Carol _____
- Jon D. _____

☐ **INTERIM CLOSURES** — **Initial / Date**
- Rick T. _____
- Pat C. _____
- Nancy (Proof) _____
- Carol _____
- Cathy _____
- Jon D. _____

☐ **CLOSURES** — **Initial / Date**
- Rick T. _____
- Pat C. _____
- Nancy (Proof) _____
- Carol _____
- Cathy _____
- Jon D. _____

☐ **CHANGE IN LICENSE FOR FEE STATUS** — **Initial / Date**
- Rick T. _____
- Pat C. _____
- Nancy (Proof) _____
- Cathy _____

☐ **COMPLAINTS** — **Initial / Date**
- Pat C. _____
- Nancy (Proof) _____
- Carol (filing & DBase) _____

☐ **GROUND WATER** — **Initial / Date**
- Nancy (Proof) _____
- Pat C _____

☑ **GENERAL CORRESPONDENCE** — **Initial / Date**
- Pat C. / Rick T. PCC 6/12/97
- Nancy (Proof) _____
- Jon D. ~~(As Needed)~~ JD 6/12/97
- Mark Steger Smith ~~(As Needed)~~ 6/23
- Jan Scrisbaugh ~~(As Needed)~~ OK

☐ **MISCELLANEOUS** — **Initial / Date**
- _____ _____
- _____ _____
- Mailed 6/18/97

☐ **FILE** _____

F:\USR\CB5453\WP\FORMS\ROUTE.SW

County Lewis + Clark
Facility & # Helena 40

Closure	Landfarm
Finan Assur	Liner
GW Corr Meas	Methane
GW Monitoring	O & M
GW Reports	Run - On
Inspections	

Other: Corrective Measures Assessment

2-5

DEPARTMENT OF ENVIRONMENTAL QUALITY
PERMITTING & COMPLIANCE DIVISION
SOLID WASTE PROGRAM
MARC RACICOT, GOVERNOR
Metcalf Building
STATE OF MONTANA
Phone: (406)444-4323
Fax: (406)444-1374
PO Box 200901
Helena, MT 59620-0901

June 17, 1997

Ted Hill
Environmental Engineer
City of Helena
316 North Park Avenue
Helena, MT 59623

Dear Ted:

I have reviewed the City of Helena Landfill Gas Extraction System - Phase 1. The plan as presented is unacceptable for the following reasons:

1) Landfill gas extraction was chosen as the preferred alternative in the Ground Water Corrective Measures Assessment (CMA). The system proposed in that document had a much larger areal extent than the current design. The current design will be unable to achieve the ground water protection desired because it does not extract gas from enough of the landfill. The extraction system ends far short of the most significantly impacted well (EPA - 1) and does not extend into the plume of ground water contamination. The minimum acceptable size for the system is as depicted on figure 3-1, of the February 1996 Addendum to the CMA.

2) No emissions estimate was provided for Phase 1 testing. It is impossible to determine if this unflared discharge to the atmosphere is permissible without pumping rates or non-methane organic compound (NMOC) concentrations. If actual NMOC numbers were not obtained during last fall's testing, then EPA default numbers for landfill gas must be used to determine the pollutant discharge rate. If more than 25 tons of uncontrolled NMOCs will be discharged from the system on an annual basis, then an air quality permit is required and a best available control technology analysis completed to determine if the proposed absorption canister would be acceptable.

3) The schedule as presented does not comply with the schedule as presented to the public during the CMA process. The testing phase is too long. There is no justification presented for a delay of this magnitude. This design is already a year late based on the schedule presented to the public during the CMA process and approved by the department. According to ARM 17.50.511(1)(h)(iii) the City had 60 days to implement methane gas control measures after the

detection above regulatory limits. Detection first occurred (after the effective date of the regulation, as the City has known for some time about gas problems at the landfill) September 20, 1994, nearly 3 years ago.

4) The testing performed last fall does not seem adequate for design purposes. To quote the conclusions section of test report: "The test well was not placed in typical refuse and therefore is not representative of future wells installed in refuse, especially in terms of radius of influence." No logs were provided for either the test well or the test probes. The proposed radius of influence for the extraction wells seems arbitrarily set at 100 feet. This may or may not be correct based on the thickness of the refuse. If this is insufficient to control gas migration and correct the ground water problems at the landfill, the density may have to increase or the system expanded.

In addition to the gas and ground water contamination at the landfill, the City has not completed closure of the landfill. This has been the topic of several previous letters and meetings. According to ARM 17.50.530(1):

> (g) The owner or operator of all Class II landfill units must complete closure activities of each Class II unit in accordance with the closure plan **within 180 days** following the beginning of closure as specified in (1)(f) of this rule. Extensions of the closure period may be granted by the department if the owner or operator demonstrates that closure will, of necessity, take longer than 180 days **and he has taken and will continue to take** all steps to prevent threats to human health and the environment from the unclosed Class II landfill unit. (Emphasis added.)

Without the installation of the gas system to implement the CMA, the Department cannot grant any time extension on the landfill closure. If the City wishes to change the end use from what was approved, then approval for the changes must be obtained from the Department. Our primary concerns are the protection of the infiltration layer and the prevention of over watering either of which could increase infiltration into the landfill and exacerbate the current gas and ground water pollution problems. The final surface design should take into account the probable necessity for a gas extraction system in the final phase of the landfill.

The City is therefore required to:

1) Submit a revision to page 1 of the methane extraction system design that meets, at a minimum, the design proposed in the CMA to the Department within 14 days of the date of this letter.

2) Implement the design within 60 days of the date of this letter as required by ARM 17.50.511(1)(h)(iii).

3) Complete the closure of the landfill and submit the appropriate construction quality assurance documentation to the Department. If the city wishes to change the end use at a later time, then the Department will provide a prompt review of the proposed changes. In the mean time, we must be assured that the cap was properly constructed and the infiltration barrier is protected from weathering effects.

If you have any further questions on this matter, please feel free to contact me. My direct phone line is 406-444-5294.

Sincerely,

F. Patrick Crowley
Acting Program Manager

cc: Kim Milburn, Public Works Director
Colleen McCarthy, Mayor

File: Helena Landfill, methane and CMA
Path: CB5403\wp\landfill\groundwater\l&c\gas

County: Lewis + Clark
Facility & #: Helena 90

Closure	Landfarm
Finan Assur	Liner
GW Corr Meas	Methane
GW Monitoring	O & M
GW Reports	Run - On
Inspections	

Other: Corrective Measures Assessment

2-5

GW Corr Meas
GW Monitorng
GW Reports
Inspections
Other:

Hydrometrics, Inc.
2727 Airport Road • Helena, Montana 59601 • (406) 443-4150 • FAX (406) 443-4155

File: Helena L.F. CMA

Design is in Methane file

RECEIVED
JUN 04 1997
MONTANA
DEPT. OF ENVIRONMENTAL QUALITY
COMMUNITY SERVICES BUREAU

June 3, 1997

Mr. Pat Crowley
MDEQ - Permitting and Compliance Division
Community Services Bureau
P.O. Box 200901
Helena, MT 59620

RE: Transmittal of Design - City of Helena Landfill Gas Extraction System - Phase 1

Dear Pat,

At the request of Ted Hill (City of Helena Environmental Engineer), this letter serves to transmit to you a set of plans for the landfill gas extraction system near the YMCA facility. This design is based on data gathered during the landfill gas well test performed earlier this year (see attachment) as well as routine methane monitoring data gathered in the past several years.

Hydrometrics, Inc. and Gas Control Engineering, Inc. have proposed a phased approach to installation of the gas collection system. Phase 1 will include the gas collection system and a temporary carbon filter for gas treatment. This system will be monitored to gather data necessary to verify the proper selection of a permanent gas treatment system in Phase 2. This phased approach is detailed as follows:

Phase 1: All systems designed to remove methane from around the YMCA facility will be installed under Phase 1 and are detailed on the attached set of plans. These systems include installation of gas wells, header pipes, condensate sumps, condensate drains, air supply lines, condensate pumps, and the extraction blower. Gas treatment will be provided by a temporary carbon filter. This plan has been discussed with Mr. David Klemp of the DEQ (with regard to air quality permitting) and he indicated that this approach was acceptable.

Gas quality and quantity after system start-up will be monitored for a period of three months. This information will allow Hydrometrics and Gas Control Engineering to verify if burning the extracted gas in the YMCA boiler is practical, and give us the data necessary for burner design (and to evaluate a retro-fit of the existing boiler system vs. a new boiler).

Phase 2: Data from Phase 1 will be used to select between permanent gas treatment in the YMCA boiler, a new boiler or in a specialized flare. Should the YMCA boiler be selected, Phase 2 will proceed to specify the boiler retrofit and required piping. If supplying the boiler is impractical, a flare will be designed for installation adjacent to the Phase 1 mechanical building. Regardless of the gas treatment selected, Phase 2 will include design of control panels, automation, failure warnings, and alarms.

This two-phased approach allows for immediate installation of methane collection equipment as well as allows a more comprehensive and efficient design of complete controls and automation which are tailored to the gas treatment option selected.

Phase 1 will address the area apparently contributing the major portion of landfill gas at the site, and the YMCA safety issues. Also included in Phase 1, is the installation of several extraction/monitoring wells that will be monitored monthly along with the methane probe network. Data from this monitoring will be used to determine if adding these wells to the extraction system will be necessary in the future to enhance gas quality, ensure containment of methane migration or for additional water quality benefits.

Final details and construction specifications will be produced after MDEQ coments are considered and plans are finalized (if necessary). These specifications will generally be consistent with the Solid Waste Association of North America's (SWANA) Master Construction Specifications for Landfill Gas Conveyance Systems and will be available to MDEQ when the bid package is produced.

Please call if you have any questions or need further information.

Sincerely,

Steve Downs

Steven K. Downs, P.E.
Senior Engineer

c: Mr. Kim Milburn, City of Helena Public Works Director
Mr. Ted Hill, City of Helena Environmental Engineer
Mr. Kirk Hein, Gas Control Engineering

GUARDIAN OF THE GULCH

City of Helena

RECEIVED
MAY 08 1995
Montana Department of Health
and Environmental Sciences
Waste Management Division

May 4, 1995

Ms. Pat Potts, DHES
Waste Management Division
P.O. Box 200901
Helena, MT 59620-0901

Dear Pat:

This letter is in response to your letter dated April 4, 1995, regarding the Helena Landfill Corrective Measures Assessment which was submitted to your department in February 1995. It is our hope that these responses will clarify many of the issues you raised in your letter. For your convenience, we have restated your comments and followed them with our responses. Also included are several replacement pages for your copies of the document.

General Comment #1

Possible avenues of risk and/or exposure that have not been considered in this alternative selection are:

> Residences with impacted wells outside of the city limits that use their well water as a source of drinking water. Although no one contaminant exceeds a particular standard at this time, what might be the cumulative effect of these VOCs (even if they are not all attributable to the landfill) in their drinking water? Especially consider the portions of the population at higher risks, such as children and the elderly. Some of the residences that have been sampled that could be at risk are:
>
> Robinson @ 328 Custer (#47),
>
> C.A. Barbeau @ 308 Custer (#48),
>
> W. Hill @ 112 Meadow (#42),
>
> E. Hartze @ 220 Custer (#51),
>
> No Name @ Custer and Green Meadow (#52),

316 N. Park, Helena, Montana 59623 Phone: (406) 447-8000

Bacon @ 108 Dunbar (#57),

Stolp @ 100 and 102 Dunbar (#59),

J. Bridges @ 76 Dunbar (#62), and

Elk River Concrete's well along Benton Avenue should have a warning sign.

Additional reinforcement discouraging the usage of irrigation wells and industrial supply wells for domestic usage/drinking within the city limits should also be considered.

Response to General Comment #1

A comprehensive risk assessment regarding cumulative affects of VOC's in groundwater is beyond the scope of the Corrective Measures Assessment (CMA). Risk based standards for each parameter of concern were determined as per ARM 16.14.708. The application of cumulative affects risk analysis is not consistent with the regulatory standards outlined in ARM.

The "Existing Corrective Measures" alternative was determined appropriate for the site based upon ARM 16.14.708 (e) which states that a "no action" alternative is appropriate if:

> "the constituents are present only in waters which are currently or reasonably expected to be a source of drinking water, and are not hydraulically connected to waters to which the hazardous constituents are migrating or are likely to migrate in a concentration(s) that would exceed the groundwater protection standards"

If future groundwater monitoring indicates that constituents are migrating beyond their present conditions, then it would be appropriate to evaluate additional corrective measures.

Existing institutional controls prohibit the usage of waters in the area where VOC's exceed or are likely to exceed the groundwater protection standards. Although these waters are hydraulically connected to drinking water source areas, it is contended that because the landfill is closed and no additional sources will be added at the landfill, that worst case conditions already exist, and it is not reasonable to assume that water with constituents exceeding the groundwater protection standards will migrate into these areas.

A notification letter from the city to well owners within the VOC plume area (as per ARM 16.14.708 (4)(a)(iii)) provided the well owners with information on the groundwater quality in the area. This letter additionally discouraged well owners from drinking the water from their wells.

General Comment #2

In general, the screening process as a whole, addressed the issues required according to ARM 16.14.708. However, it is important to point-out that the initial screening criteria are to be reviewed according to ARM 16.14.708(6)(c) which is intended to address the following points for each potential remedy:

(i) The performance, reliability, ease of implementation, and potential impacts of appropriate potential remedies, including safety impacts, cross-media impacts, and control of exposure to any residual contamination;

(ii) The time required to begin and complete the remedy;

(iii) The costs of remedy implementation; and

(iv) The institutional requirements such as state or local permit requirements or other environmental or public health requirements that may substantially affect implementation of the remedy(ies).

Alternatives selected through the initial screening process are to be screened according to ARM 16.14.708(7)(c) which provides the following information for each alternative selected:

(i) The long and short-term effectiveness and protectiveness of the potential remedy(ies), along with the degree of certainty that the remedy will prove successful . . .;

(ii) The effectiveness of the remedy in controlling the source to reduce further releases . . .;

(iii) The ease or difficulty of implementing a potential remedy(ies) . . .;

(iv) Practicable capability of the owner or operator, including a consideration of the technical and economic capability.

(v) The degree to which the community concerns are addressed by a potential remedy(ies).

The final selection of an appropriate remedial alternative is to be evaluated according to the following factors ARM 16.14.708(7)(b):

(i) Be protective of human health and the environment;

(ii) Attain the ground water protection standards as specified pursuant to (5) of this rule (i.e., ARM 16.14.708);

(iii) Control the source(s) of releases so as to reduce or eliminate, to the maximum extent practicable, further releases of Table 2 [ARM 16.14.706] constituents into the environment that may pose a threat to human health or the environment;

(iv) Comply with standards for management of wastes as specified in (8) of this rule.

(v) Be approved by the Department.

Although the specified regulatory format was not strictly followed, the pertinent technical information was presented in a clear, concise manner in this document. The final remedy(ies) selected, at a minimum, should be reviewed for the criteria required according to ARM 16.14.708(7)(b).

Response to General Comment 2

ARM 16.14.708 contains several criteria for evaluation of potential corrective measures. However, no specific regulatory format for applying these criteria is presented. As discussed in Section 4.1, the criteria presented in CMA are consistent with those specified in the ARM, however they have been grouped and categorized into a CERCLA type feasibility study format. This format was selected in lieu of strict regulatory guidance because of its proven technical and regulatory defensibility.

The criteria listed in ARM 16.14.708 (7)(b) were considered in the selection process in the reliability criteria presented in Section 6. Additionally, the criteria in ARM 16.14.708(c) and the modifying criteria in ARM 16.14.708 (d) were evaluated in the additional criteria groups presented in Section 6 (Ease of Implementation, Potential Impacts, Time-frame, and Cost).

Specific Comments

1. Table 2-1

Why aren't 83-7 and EPA-2 being sampled? Are they plugged and abandoned? Was April 1994 the first time EPA-1 was sampled and the ground water analyzed for VOCs?

Are there any monitoring wells or piezometers left west-northwest of EPA-1? If so, could they be sampled?

Response:

Monitoring wells 83-7 and EPA-2 are monitored only for static water level. Monitoring wells which are routinely sampled for water quality analysis are EPA-1, MPC-HL-1, HL-90-1, HL-90-2, HL-90-3, 83-6, 94-1, 94-2, and 94-3 as per the 1993 Helena Landfill Sampling and Analysis Plan which was approved by the MDHES. EPA-1 has been routinely sampled for VOC's since 1991.

Monitoring wells 83-7 and EPA-4 are operational wells and could be sampled assuming water table conditions are appropriate (the wells contain water - well 83-7 was dry in January 1995).

2. Page 2-3

A. What concentration level(s) were used to calculate the volumetric equivalent of tetrachloroethene dissolved in a 365 acre, 50-foot deep plume?

Response:
The concentrations depicted by the contours on Figure 2-2 were utilized for the volume calculations, as referenced on Page 2-3. The contour method for determining average concentration and volume from contour map is a typical engineering practice. ?

B. Please list the specific monitoring wells that are completed in the lower part of the aquifer, and the total depth with the length of screened interval for each well. Approximately how thick is the aquifer beneath the landfill?

Response:
Several wells have been drilled through the uppermost aquifer into a confining layer. Some of these wells have been abandoned, and are no longer in service.

The wells completed in the lower part of the aquifer include :

Monitoring Well	Total Depth	Screened Interval	Confining Layer	Confining Layer
	Depth			
HL-2	28'	to 28'	clay	25'
HL-3	35'	to 29'	bedrock	28'
HL-4	42'	to 41'	clay	36'
82-1	40'	14-34'	bedrock?	34'
82-2	43'	23-43'	cemented sed's	30'
HL-90-3	no water in the alluvium - limestone at 53'			
83-6	25'	19-23'	dolomite	21'

Most of these wells are peripheral to the landfill, and several wells drilled within the landfill have not been extended to a confining layer at depth of up to about 80'. An estimated 50 foot aquifer thickness is based on these peripheral wells and existing literature (USGS 1992 - "Hydrogeology of the Helena Valley-Fill Aquifer System, West Central Montana). While this estimate is quite subjective this figure was thought to be quite conservative as the average aquifer thickness in these peripheral wells is less than 10', and previous estimates of aquifer thickness in the area have been around 20 feet (Hydrometrics, 1991 and F and M consultants, 1992).

3. 2.2 GROUND WATER PROTECTION STANDARDS (GWPSs) pg. 2-7

A. Methylene chloride (dichloromethane) does have a human health standard (HHS according to Montana WQB-7) which is 4.7 ug/L, and a maximum contaminant level (MCL), State and Federal, which is 5 ug/L.

Response:
Comment Noted. Page 2-7 and Table 2-2 (enclosed) have been revised to reflect this comment.

B. What was the calculated GWPS for methylene chloride according to the risk-based equation presented on the bottom of page 2-7? How does it compare with the HHS, and the MCL?

Response:
The calculated GWPS for methylene chloride is presented on Table 2-2 (5ug/L). This is equivalent to the MCL and is an appropriate GWPS.

4. Page 2-9
Please note that the following constituents do have State HHSs, as well as State and Federal MCLs:

bromoform	HHS= 0.56 ug/L	MCL= 100 ug/L
dibromochloromethane (chlorodibromomethane)	HHS= 0.4 ug/L	MCL= 100 ug/L

Response:
We are in agreement that these constituents have established MCL's which would be appropriate for use as GWPS. However, GWPS were not listed for these constituents because these constituents are at higher concentrations upgradient like wh and cross gradient from the landfill and are therefore not considered contaminants attributable to the landfill.

5. Page 2-9
If you can demonstrate that ground water contamination is coming from an upgradient source(s) other than the landfill through historical record documentation and/or field investigations, the Department would appreciate the timely submittal of this information, so that it can be reviewed, and so that other potentially responsible polluters or localized sources of contamination can be found and cleaned up.

Response:
Comment noted.

6. Page 2-10, TABLE 2-2
GWPSs have been established for the following compounds:

bromodichloromethane (chlorodibromomethane)	HHS= 0.41 ug/L	MCL= 100 ug/L
bromoform	HHS= 0.56 ug/L	MCL= 100 ug/L
dibromochloromethane (chlorodibromomethane)	HHS= 0.4 ug/L	MCL= 100 ug/L
methylene chloride (dichloromethane)	HHS= 4.7 ug/L	MCL= 5 ug/L

These standards need to be included in Table 2-2. Also, see comments in item #4 above (i.e., section 2.2 of the document), as some of this information has been repeated for the purpose of clarity in these comments.

Response:

A GWPS is included in Table 2-2 for methylene chloride, and is consistent with the MCL referenced. A GWPS for bromodichloromethane is also included on Table 2-2. This standard is equal to the background concentration as per ARM 14.16.708 (5)(c). GWPS were not listed for bromoform or dibromochloromethane as discussed in the response to comment 4.

7. Page 2-11

A. Please explain how, and to what particular upgradient source(s) the following constituents are attributable: arsenic, chloroform, selenium, and bromodichloro-methane. Bis (2-ethylhexyl) phthalate (check spelling in document, please) is a common laboratory contaminant and has been detected in many of the Table 2 analyses for landfills in Montana.

Response:
These constituents are attributable to upgradient sources because they are detected at higher concentrations in upgradient wells than in downgradient wells. It is beyond the scope of the CMA and the city's financial obligation to trace these constituents to specific sources. A revised page 2-11 is enclosed and has been corrected for spelling.

B. All but one [bis (2-ethylhexyl) phthalate] of the above constituents have an MCL, and therefore, a GWP/enforcement standard. Please explain how background concentrations are compared to GWPSs/MCLs at this site for the parameters/ constituents mentioned above. It is not clear from the text what exactly is intended.

Response:
Groundwater protection standards have been developed for each of the parameters on Table 2-2. ARM 16.14.708(5) specifies the criteria for GWPS development, and the application of ARM 16.14.708 is demonstrated in the flowchart on Figure 2-3. For parameters which exhibit background concentrations above the MCL, the background concentrations were chosen as the appropriate GWPS.

C. To what practical quantitation limit are you referring with regard to sulfides? There is a secondary drinking water standard for sulfate, but no enforcement standard, MCL, or PQL as far as I know; please explain. Also, note that the ARM citation should be corrected in this paragraph to read ARM 16.14.706.

Response:
The correction for the reference to ARM 16.14.706 is noted (revised page 2-11). The practical quantitation limit (PQL) for sulfide (according to ARM 16.14.706) is 4 mg/L which is several orders of magnitude higher than the level of sulfide detected in MPC-1. This demonstrates that the sulfide reported in the sample is suspect and at an extremely low level. No reference to MCL's or GWPS was made.

D. Was there a reason for not including tetrachloroethene in the list of constituents entitled "potentially attributable to the landfill"? I realize the next section (i.e., 2.3 Contaminants of Concern) specifically addresses tetrachloroethene, but this chemical compound should appear on the list immediately preceding this section, as well.

Response:
Comment noted. Tetrachloroethene has been included on revised page 2-11.

8. DEGRADATION IN WATER Page 2-13
Please keep in mind that some of the commonly encountered degradation products of tetrachloroethene, when associated with landfill environments (anaerobic conditions, possible methanogenisis) are 1,2-dichloroethene (cis- and trans-), and/or vinyl chloride.

Response:
Comment noted.

9. Page 2-15
Please explain the risks, if any, that may be associated with the ingestion of tetrachloroethene which would be associated with home grown produce from backyard gardens irrigated with elevated levels of the VOCs found in the ground water at, and adjacent to the landfill. Also consider possible risks for ground water usage in swimming pools and lawn watering. In some instances, it has been

mentioned that well water is being used for drinking for various personal reasons (taste, economics, etc.).

Response:
Because the risk associated with the listed activities is intuitively less than for the drinking water exposure pathway, and it has been demonstrated that risks for utilizing these waters for drinking is extremely low, a risk assessment for these less intensive exposure pathways was considered inappropriate.

10. Page 2-16 EPA DRINKING WATER HEALTH ADVISORIES
Shouldn't the discussion concerning long-term health advisories be for protection against carcinogenic effects, not non-carcinogenic effects? If so, were the protective levels given in the text supposed to be in mg/L, or ug/L, as the MCL is only 5 ug/L for tetrachloroethene?

Response:
Carcinogenic effects are discussed beginning on the last paragraph of Page 2-16. The protective levels for non-carcinogenic effects are in mg/L as stated in the document.

11. Page 5-7, Figure 5-2 "Landfill Gas Extraction and Treatment"
This figure is inadequate for the determination of any landfill gas extraction plan. Maybe this figure was submitted incomplete by mistake. Please complete this figure to show plans for a landfill gas extraction system if you would like this technical methodology to be considered as a remedial alternative for the clean-up of the ground water contamination, and/or as possible source control.

Response:
The legend of this figure inadvertently described the shaded area as "general direction of groundwater flow" and should have read "area of landfill gas extraction". A revised Figure 5-2 is included. This area of gas extraction was preferred because this area of the landfill appears to be the main source for tetrachloroethene. Because this alternative is not a preferred remedy at this time, specific plans were not included in the CMA.

12. Page 5-10, Figure 5-4
Relatively speaking, where will the soil vapor extraction (SVE) wells and/or horizontal piping be installed relative to the air sparging plan outlined on this figure?

The Department is concerned that this approach to ground water remediation would likely result in explosive methane/air mixtures as described in Section 5.3.3. Please explain in greater detail, the likelihood of such an explosive situation, or the preventative measures that could be taken in advance to avoid this hazardous situation.

Response:
SVE extraction would occur directly above the sparging area to ensure that vapors are not allowed to migrate back into the landfill. This would likely prevent the likelihood of an explosive situation. It is a typical practice to extract up to five times the amount of air that is injected to ensure that migration of explosive vapors will not occur.

13. Page 5-13, Figure 5-6
Maximum tetrachloroethene concentrations (i.e., those exceeding the MCL) in the ground water appear to be localized adjacent to the northwest corner of the landfill property boundary [specifically, HL-90-1 (15 to 20 ug/L)]. Both the air sparging (and apparently the SVE, if displayed) and the ground water extraction plans only cover the northern boundary of the landfill, along the railroad tracks, westward to the Elk River Concrete facility. Do you think ground water flow control and/or soil vapor extraction (i.e., behind Elk River Concrete, or just west of the transfer station) would be helpful on the west-northwest landfill facility property boundary?

Response:
This determination would be made during the design phase of these alternatives if they are determined to be necessary.

GENERAL ECONOMIC COMMENTS

The Department strongly suggests that the City have several ground water models prepared to demonstrate the effects of these proposed remediation alternatives. This should include impacts on the contaminants and contaminant concentrations, compared to the length of time required for the ground water clean-up. Physical as well as chemical factors need to be more thoroughly evaluated to determine the applicability of the specific alternative(s).

An example of such a model demonstration for pump and treat would be based on the aquifer data available and the number of extraction wells required to sufficiently depress the water table to efficiently intercept the contaminants. Based on the nature of the contaminants, will the selected alternatives efficiently address all ground water contamination, or will phase-separated products (i.e., DNAPLs at the base of the aquifer) remain behind?

Response:
The modeling referred to in this comment would be appropriate if one of these alternatives is deemed necessary. However, this modeling is quite expensive and time-consuming and is not appropriate at this time.

Would SVE be adequate, even with air sparging to address the tetrachloroethene problem in the ground water, or will this technology only deal with the less dense VOCs? Is it possible from the data available to determine if the tetrachloroethene contamination is coming from a DNAPL pool at the base of the aquifer? Detectable concentrations of 1,1,1-tricholoroethane appear to be centered around a cluster

of private wells located north of Custer Avenue. Does this help to explain possible degradation processes, or age date the contaminant plumes or chemical travel times in the aquifer in any way?

Response:
The spargeability(strippability) of a constituent is based upon the compounds Henry's Constant and not upon density. Compounds with a Henry's Constant of greater than 100 [atm - (m^3water/ m^3air)] are considered readily strippable. The Henry's Constant for tetrachloroethene is 1,100. As discussed on page 2-3 of the CMA, water quality data are not indicative of a significant DNAPL plume below the landfill. The significance of the cluster of 1,1,1-trichloroethane detects in wells along Custer Ave. has not been evaluated.

Assuming a landfill gas extraction system is required at this facility anyway due to the exceedance of lower explosive levels of landfill gases in the unsaturated zone, the design plan and schedule for implementation could be included in this CMS.

Response:
The city has not assumed that a landfill gas extraction system is required at the facility at this time, however, the City has upgraded its gas monitoring efforts.

INCOMPLETE ALTERNATIVE

It has come to the Department's attention that no re-vegetation has occurred, nor has the required erosional soil cover been installed over the low permeability/non-infiltration layer. This delay in final landfill closure requirements has created extended renewal fee payments for the City. Please be advised that if these passive, source control requirements are seriously being considered as the selected alternative for ground water remediation at this site, then these final closure requirements must be met in a timely manner, or a reasonable schedule of completion dates will need to be submitted to the Department along with any additional design requirements for prompt consideration.

Response:

As you note the required revegetation is not yet in place. The City has kept individual members of your Bureau informed of the plans and status of these efforts but perhaps a summary is appropriate here.

As the time for final cover neared, the City looked for sources for suitable clay material that could be economically obtained and transported to our site. Suitable material was made available to us from the Lewis and Clark County Landfill site and a contractor was hired to haul and place it. The site was surveyed to determine how much material was required and where. After the clay was

delivered to the site the contractor distributed it. This process also compacted the clay layer very well over the large fairly level areas. The site was then resurveyed. Several areas were found with insufficient depth and others that had an excess. The City decided to haul in more clay to fill the low spots rather than try to redistribute what had already been compacted. Neither clay nor a hauling contractor were available before winter (1994-1995). The material was hauled to the site as soon as possible in the spring of 1995. The city expects to have all material properly placed, compacted as required, and seeded before winter of 1995.

Another related item that is not yet complete is the methane monitoring wells. The Bureau has directed the City to install three methane monitoring probes in the toe of the slope along the north edge of closed landfill. This slope is so steep that platforms must be constructed for the drill rig to operate from. This adds considerable time and cost. The City has proposed that these wells be located instead on city property across the tracks to the north. This would protect human health and property at least as well as the Bureau's directed action. If the Bureau would agree to this, the methane monitoring wells could be in place in a few days at much less cost to the public.

REQUIRED PUBLIC MEETING

The required public meeting [ARM 16.14.708 (6) (d)] will also be necessary to finalize the actual alternative selection. It is the responsibility of the owner/operator to schedule this meeting and provide sufficient public notice. The Department suggests that we have a meeting well in advance of the public meeting to discuss the above issues, and hopefully agree on the most effective and appropriate approach to ground water remediation at this site for all involved parties.

Response:
The city agrees that it would be appropriate to discuss these issues with the department, and would like to schedule a meeting in the near future.

We look forward to discussing these issues with you in person. Please call if you have any questions.

Sincerely,

Robert T. Hill
Environmental Engineer

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constituent identified as potentially attributable to the City of Helena Landfill or migrating through the landfill is established as one of the following according to the flow chart presented in Figure 2-3:

- the maximum contaminant level (MCL) for that constituent;
- the background concentration for the constituent;
- established health-based standard for the constituent (Circular WQB-7); or
- concentration established by risk analysis performed in accordance with ARM 16.14.708 (5) (d).

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TABLE 2-2
Development of Groundwater Protection Standards

Parameter	Max. Detect. Upgradient (mg/L)	Max. Detect. Inside RCB (mg/L)	Max. Detect. Downgradient (mg/L)	Potentially Attributed to Helena Landfill?	Develop GW Protection Standard?	Contaminant of Concern?	GW Protection Standard (mg/L)	GW Protection Standard Basis
Arsenic	0.0070	nd	nd	no	✓*	no	0.05	(1)
Barium	nd	0.1000	0.1000	✓	✓	no	2.0	(1)
Iron	0.0900	0.0300	nd	✓	✓	no	300	(4)
Selenium	0.0270	nd	nd	no	✓*	no	0.05	(1)
Zinc	0.0300	0.1500	0.0700	✓	✓	no	5.0	(4)
1,1,1-Trichloroethane	nd	0.0041	0.0017	✓	✓	no	0.2	(1)
1,1-Dichloroethane	nd	**0.0073**	0.0010	✓	✓	no	0.007	(1)
1,2-Dichloropropane	nd	0.0028	nd	✓	✓	no	0.005	(1)
Bromodichloromethane	**0.0170**	nd	0.0015	no	✓*	no	0.017	(2)
Bromoform	0.0150	nd	nd	no	-	-	-	-
Carbon Disulfide	nd	nd	0.0021	no	-	-	-	-
Chloroform	**0.0620**	0.0061	0.0430	no	✓*	no	0.062	(2)
Cis-1,2-Dichloroethene	nd	0.0018	0.0024	✓	✓	no	0.07	(1)
Dibromochloromethane	0.0290	nd	nd	no	-	-	-	-
Dichlorodifluoromethane	nd	0.0044	0.0030	✓	✓	no	6.9	(4)
Methylene Chloride	nd	0.0021	0.0012	✓	✓	no	0.005	(1)
Tetrachloroethene	**0.0052**	**0.0410**	**0.0051**	✓	✓	✓	0.005	(1)
Toluene	nd	nd	0.0062	✓	✓	no	1.0	(1)
Trichloroethene	nd	0.0031	nd	✓	✓	no	0.005	(1)
Trichlorofluoromethane	nd	0.0030	0.0015	✓	✓	no	10.0	(4)
Trans-1,4-Dichloro-2-Butene	nd	nd	0.0020	no	-	-	-	-
Bis (2-ethylhexyl) Phthalate	**0.0100**	nd	nd	no	✓*	no	0.01	(3)
Cyanide (total)	nd	0.0400	0.0047	✓	✓	no	0.2	(4)
Sulfide	nd	0.0400	nd	✓	no**	-	-	-

Concentrations in **bold** equal or exceed the Groundwater Protection Standard

(1) Maximum Contaminant Level (MCL) as adopted by the State of Montana
(2) Based on highest value measured in background wells
(3) Background concentration exceeds MCL or health-based standard
(4) Health-based standard (from Circular WQB-7)
(5) Based on risk analysis performed in accordance with ARM 16.14.708 (5) (d)

RCB Relative Compliance Boundary
nd Not Detected
- Parameter has been eliminated - no Groundwater Protection Standard is established
✓* Groundwater Protection Standard necessary despite upgradient source
no** No existing guidance or standards for protection of human health
Shading indicates a Contaminant of Concern

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protection standards have been established for the following constituents to verify that detected concentrations remain attributable to up-gradient sources:

- Arsenic
- Chloroform
- Selenium
- Bromodichloromethane
- Bis (2-ethylhexyl) Phthalate

Sulfide was detected at MPC-1, but at concentrations considerably lower than the practical quantitation limit listed in ARM 16.14.706. No guidance or standards have been established for protection of human health for sulfide, and therefore, no groundwater protection standards has been established:

The remaining constituents were detected during sampling and are potentially attributable to the landfill. Therefore, groundwater protection standards were established for the following (Table 2-2):

- Barium
- Dichlorodifluoromethane
- Cis-1,2-Dichloroethene
- Iron
- Toluene
- Trichloroethene
- Zinc
- Cyanide
- 1,1-Dichloroethane
- 1,2-Dichloropropane
- Methylene Chloride
- 1,1,1-Trichloroethane
- Trichlorofluoromethane
- Tetrachloroethene

2.3 CONTAMINANTS OF CONCERN

Previous sections have detailed the detection of several organic and inorganic constituents in monitoring wells in and near the Helena Landfill. In order for a chemical constituent to be considered a Contaminant of Concern for corrective measures consideration, it must meet the following criteria:

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Legend

Area of Landfill Gas Extraction

Scale
In Feet
400 0 400 800

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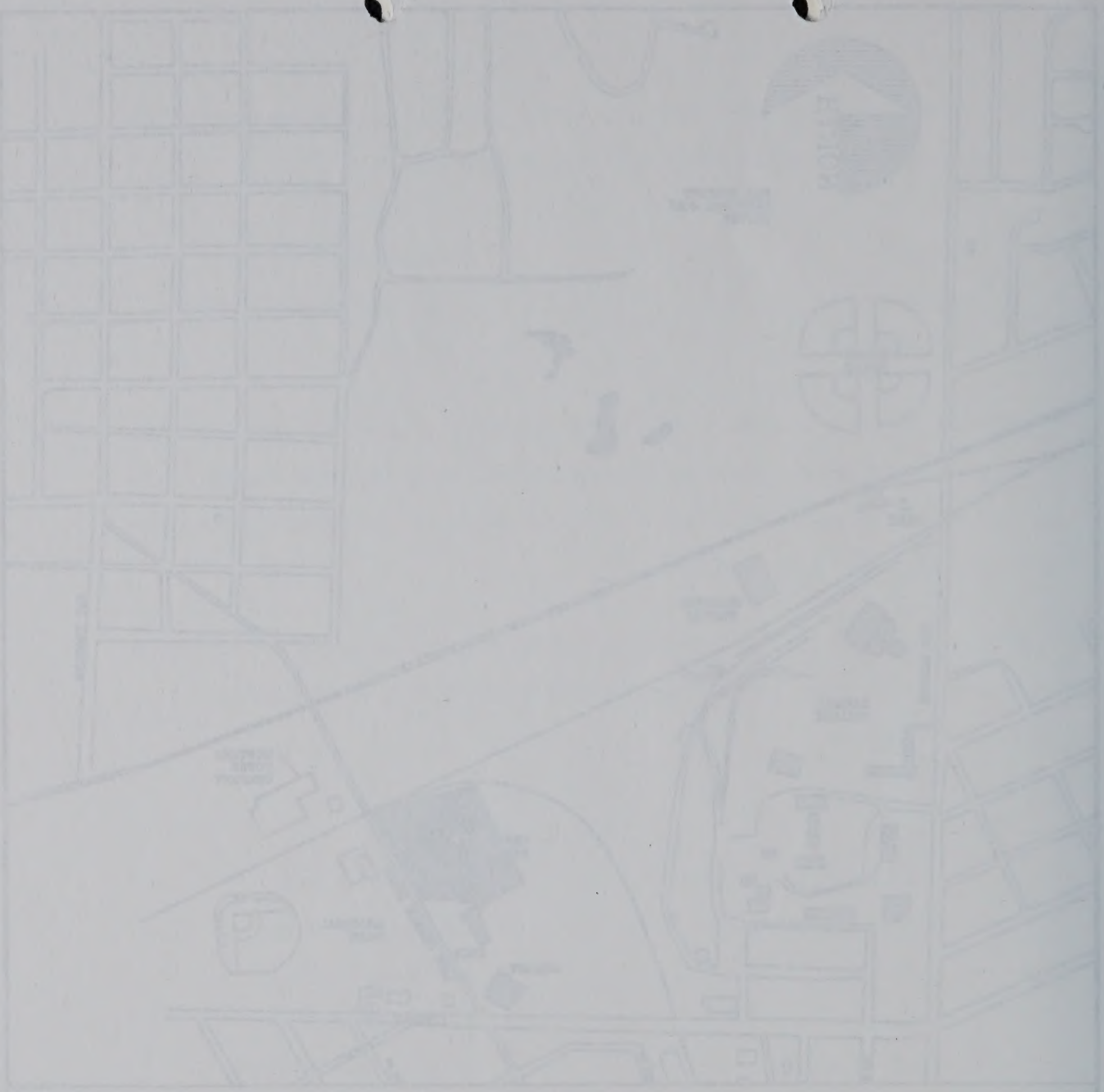
Proj. No: CHHL03
Dwg. No: 52895014
Drawn By: 0083
Last Update: 5/3/95
Ref. Dwg: 52895009
Rev. Date:

Hydrometrics, Inc.

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Waste Management Division

Figure 5-2
Alternative 2:
Landfill Gas Extraction and Treatment
City of Helena Landfill
Helena, Montana

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constituent identified as potentially attributable to the City of Helena Landfill or migrating through the landfill is established as one of the following according to the flow chart presented in Figure 2-3:

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- the background concentration for the constituent;
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Barium	nd	0.1000	0.1000	✓	✓	no	2.0	(1)
Iron	0.0900	0.0300	nd	✓	✓	no	300	(4)
Selenium	0.0270	nd	nd	no	✓*	no	0.05	(1)
Zinc	0.0300	0.1500	0.0700	✓	✓	no	5.0	(4)
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Toluene	nd	nd	0.0062	✓	✓	no	1.0	(1)
Trichloroethene	nd	0.0031	nd	✓	✓	no	0.005	(1)
Trichlorofluoromethane	nd	0.0030	0.0015	✓	✓	no	10.0	(4)
Trans-1,4-Dichloro-2-Butene	nd	nd	0.0020	no	-	-	-	-
Bis (2-ethylhexyl) Phthalate	**0.0100**	nd	nd	no	✓*	no	0.01	(3)
Cyanide (total)	nd	0.0400	0.0047	✓	✓	no	0.2	(4)
Sulfide	nd	0.0400	nd	✓	no**	-	-	-

Concentrations in **bold** equal or exceed the Groundwater Protection Standard

(1) Maximum Contaminant Level (MCL) as adopted by the State of Montana
(2) Based on highest value measured in background wells
(3) Background concentration exceeds MCL or health-based standard
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✓* Groundwater Protection Standard necessary despite upgradient source
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- Selenium
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- Cis-1,2-Dichloroethene
- Iron
- Toluene
- Trichloroethene
- Zinc
- Cyanide
- 1,1-Dichloroethane
- 1,2-Dichloropropane
- Methylene Chloride
- 1,1,1-Trichloroethane
- Trichlorofluoromethane
- Tetrachloroethene

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2.3 CONTAMINANTS OF CONCERN

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Drawn By: 0083
Last Update: 5/3/95
Ref. Dwg: 52895009
Rev. Date:

Hydrometrics, Inc.

Figure 5-2
Alternative 2:
Landfill Gas Extraction and Treatment
City of Helena Landfill
Helena, Montana

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City of Helena

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and Environmental Sciences
Waste Management Division

February 3, 1995

Pat Potts
Dept. of Health & Environmental Sciences
Solid Waste Program
2209 Phoenix Avenue
P.O. Box 200901
Helena MT 59620-0901

Dear Pat:

Enclosed are two final copies of the Corrective Measures Assessment, City of Helena Landfill- Helena, Montana. This assessment is being submitted for review by your department as required by Montana Solid Waste Management Regulations.

Please call me at 447-8426 if you have any questions.

Sincerely,

Kim C. Milburn, P.E.
Public Works Director

KCM:skw

c Steve Downs
Ted Hill

landfill.cma

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and Environmental Sciences
Waste Management Division

316 N. Park, Helena, Montana 59623 Phone: (406) 447-8000

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Environmental Quality
Waste Management Division

ADDENDUM TO

CORRECTIVE MEASURES ASSESSMENT

FOR THE HELENA LANDFILL

HELENA MONTANA

Prepared for

Mr. Kim Milburn
Director of Public Works
CITY OF HELENA
Helena, MT 59601

Prepared by
HYDROMETRICS, INC.
2727 Airport Road
Helena, MT 59601

February 1996

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ADDENDUM TO

CORRECTIVE MEASURES ASSESSMENT

FOR THE HELENA LANDFILL

CITY OF HELENA

1.0 INTRODUCTION

This addendum to the Corrective Measures Assessment (CMA) for the Helena Landfill has been prepared to present to the Montana Department of Environmental Quality (MDEQ) and to the public, proposed corrective actions which will be implemented by the City of Helena, in addition to those presented in the original CMA. Based on discussions with MDEQ and subsequent evaluation, the City of Helena proposes that the installation of a landfill gas (LFG) extraction system in the Centennial Park will provide water quality benefits beyond the alternatives presented in the CMA. The installation of this system was discussed in Section 5.2 of the CMA and will be further detailed in this addendum.

Section 2.0 of this addendum provides an evaluation and overview of 1995 water quality data collected at the site, to demonstrate current conditions at the site. Section 3.0 describes the proposed additional corrective actions, and Section 4.0 outlines the proposed schedule for implementation of the corrective actions.

2.0 EVALUATION OF 1995 WATER QUALITY DATA

This section characterizes the current extent and degree of groundwater contamination present at and downgradient from the landfill site. Included are summaries of water quality data collected during 1995, as well as a potentiometric map and an iso-concentration contour map for tetrachloroethylene for data collected in December 1995. More detailed water quality information and a tabularized presentation of all of the data will be included in the 1995 Annual Water Resources Monitoring Report.

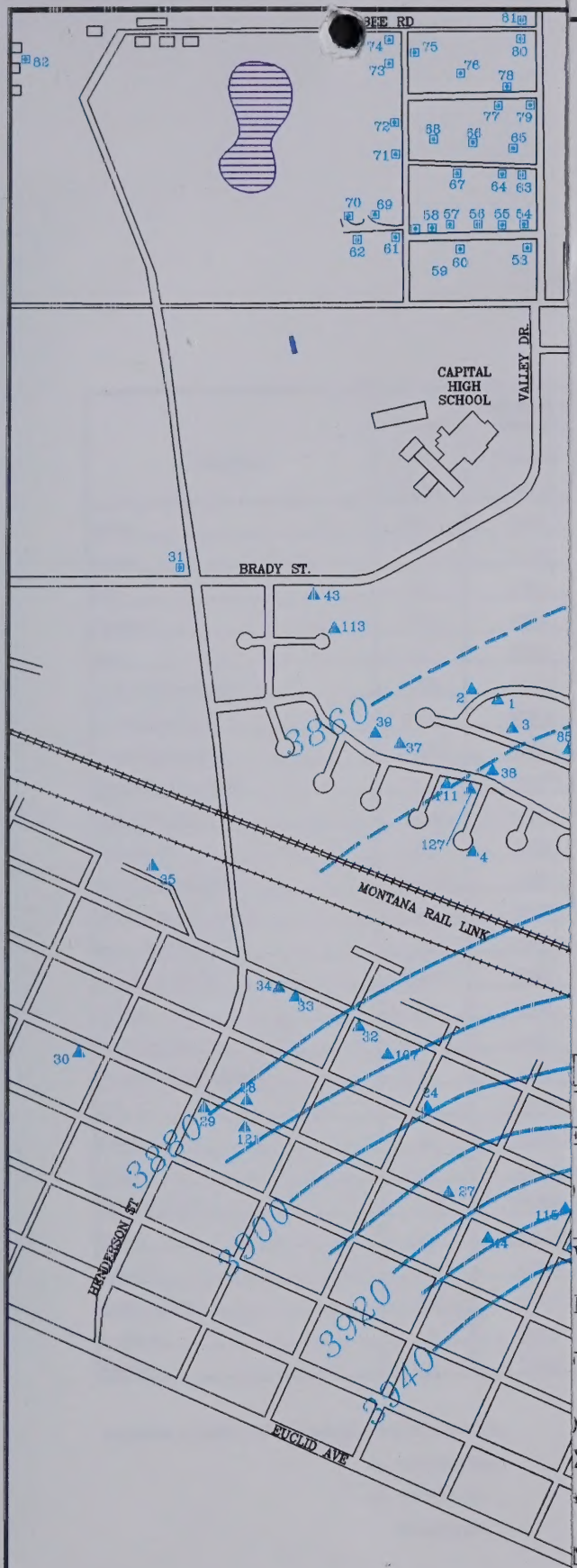
Figure 2-1 is a potentiometric contour map showing current groundwater flow directions. This map is similar to the map presented in the CMA, but also incorporates data from four new monitoring wells (MPC-3, MPC-4, MPC-5, MPC-6) installed by Montana Power Company just east of the landfill. The data from these wells is consistent with previous interpretations of groundwater flow in this area, and shows that there is not significant flow eastward from the landfill.

Two separate sampling events were conducted during 1995. Samples were collected from 26 wells, eight of which are either up-gradient or cross-gradient from the landfill area. Groundwater samples collected were analyzed for chemical constituents potentially found in landfill leachate. Sample results indicated a detection of 27 constituents. Table 2-1 lists the maximum concentration of each constituent detected during 1995.

Chloroform was the most prevalent organic constituent detected during the 1995 groundwater monitoring (detected in 13 of the 26 wells). Review of 1995 data indicates that chloroform concentrations in groundwater are at higher concentrations upgradient and cross-gradient than in areas directly down-gradient from the landfill. Chloroform discovered throughout the study area does not appear to originate from the landfill.

Of the detected constituents only 2 (nitrate and tetrachloroethene) existed in concentration which exceed the maximum contaminant limit (MCL) specified under Montana regulation. Nitrate concentrations upgradient of the landfill were well above those down-gradient so this constituent is not attributable to the landfill. Tetrachloroethene concentrations downgradient from the landfill were consistent with values for 1994. However, in the apparent source area near monitoring well EPA-1, tetrachloroethene concentrations were significantly lower then in 1994. A corresponding drop in tetrachloroethene concentration is expected down-gradient from the landfill in the future.

Tetrachloroethene (also know as perchlorethylene) was detected in 7 of the 26 wells. Figure 2-2 is an isoconcentration map showing the areal distribution of tetrachloroethene in groundwater near the Helena Landfill. Although the PCE plume presented in Figure 2-2 covers a large areal extent, concentrations representing the tetrachloroethene plume are significantly lower than in 1994.



WELL	WATER TABLE ELEVATION (ft)
HL-90-1	3892.14
HL-90-2	3904.36
HL-90-3	3901.72
MPC-1	3925.08
MPC-2	3920.17
HL-94-1	3936.77
HL-94-2	3937.04
HL-94-3	3933.28
83-6	3979.55
13	3881.14
19	3852.29
26	3940.25
28	3880.51
41	3870.19
92	3903.09
I-1	3795.96
I-2	3883.60
I-5	3895.71
I-6	3914.10
MPC-3	3937.51
MPC-4	3939.93
MPC-5	3937.24
MPC-6	3937.18
EPA-1	3936.12
EPA-2	DRY
EPA-4	3909.97
HL-1	3973.16
INF.GALLERY	3912.83

LEGEND

EZOMETER

NITORING WELL

RIGATION WELL

MESTIC WELL

FILTRATION GALLERY

CONCENTRATION CONTOUR LINE,
XIMUM 1994 DETECTIONS IN $\mu g/L$
SHED WHERE INFERRED)

NERAL DIRECTION OF GROUNDWATER FLOW

STUDY AREA AND JANUARY 1996 OTENTIOMETRIC SURFACE

FIGURE 2-1

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WELL	WATER TABLE ELEVATION (ft)
HL-90-1	3892.14
HL-90-2	3904.36
HL-90-3	3901.72
MPC-1	3925.08
MPC-2	3920.17
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HL-94-2	3937.04
HL-94-3	3933.28
83-6	3979.55
13	3881.14
19	3852.29
26	3940.25
28	3880.51
41	3870.19
92	3903.09
I-1	3795.96
I-2	3883.60
I-5	3895.71
I-6	3914.10
MPC-3	3937.51
MPC-4	3939.93
MPC-5	3937.24
MPC-6	3937.18
EPA-1	3936.12
EPA-2	DRY
EPA-4	3909.97
HL-1	3973.16
INF.GALLERY	3912.83

LEGEND

- HL-1 ■ PIEZOMETER
- 83-6 ● MONITORING WELL
- I-6 ▲ IRRIGATION WELL
- 30 ▣ DOMESTIC WELL
- INFILTRATION GALLERY
- 3900— ISOCONCENTRATION CONTOUR LINE, MAXIMUM 1994 DETECTIONS IN $\mu g/L$ (DASHED WHERE INFERRED)
- GENERAL DIRECTION OF GROUNDWATER FLOW

CITY OF HELENA LANDFILL
ADDENDUM TO CORRECTIVE MEASURES ASSESSMENT
HELENA, MONTANA

STUDY AREA AND JANUARY 1996 POTENTIOMETRIC SURFACE

FIGURE 2-1

PROJECT CODE: CHHL03 UPDATE TIME: 3:10PM
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Hydrometrics, Inc. Consulting Engineers, Scientists and Contractors

Parameter	Montana MCL (mg/L)	Maximum or Minimum Detection (mg/L)	Outside Relative Compliance Boundary						
			31 (mg/L)	57 (mg/L)	62 (mg/L)	75 (mg/L)	93 (mg/L)	96 (mg/L)	Inf. Gal (mg/L)
Arsenic	0.05	0.007	-	-	-	-	-	-	-
Barium	2.0	0.100	-	-	-	-	-	-	-
Iron	na	1.990	-	-	-	-	-	-	-
Selenium	0.05	0.022	-	-	-	-	-	-	-
Zinc	na	0.030	-	-	-	-	-	-	-
1,1,1-Trichloroethane	0.2000	0.003	nd	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	0.0070	0.007	nd	nd	nd	nd	nd	nd	nd
1,2-Dichloropropane	0.0050	0.002	nd	nd	nd	nd	nd	nd	nd
Bromodichloromethane	na	0.003	nd	nd	nd	nd	nd	nd	nd
Carbon Disulfide	na	0.002	nd	nd	nd	nd	nd	nd	nd
Chloroform	na	0.020	0.008	0.002	0.010	nd	0.002	nd	nd
Cis-1,2-Dichloroethene	0.0700	0.002	nd	nd	nd	nd	nd	nd	nd
Dichlorodifluoromethane	na	0.002	nd	0.001	0.001	nd	nd	nd	nd
Methylene Chloride	na	0.001	nd	nd	nd	nd	nd	nd	nd
Tetrachloroethene	0.0050	**0.024**	nd	0.002	0.002	nd	nd	nd	nd
Toluene	1.0	0.002	nd	nd	nd	nd	nd	nd	nd
Trichloroethene	0.0050	0.003	nd	nd	nd	nd	nd	nd	nd
Trichlorofluoromethane	na	0.001	nd	nd	nd	nd	nd	nd	nd
Chloride	na	126.000	-	-	-	-	-	-	-
Cobalt	na	0.020	-	-	-	-	-	-	-
Nickel	na	0.040	-	-	-	-	-	-	-
Nitrate & Nitrite	10.0	**42.800**	-	-	-	-	-	-	-
Sulfate	na	1860.000	-	-	-	-	-	-	-
Thallium	na	1.200	-	-	-	-	-	-	-
m&p - xylenes	na	0.004	nd	nd	nd	nd	nd	nd	nd
o - xylene	na	0.003	nd	nd	nd	nd	nd	nd	nd
Cyanide	na	9.500	-	-	-	-	-	-	-

Parameters in **bold** idicate results higher than Montana MCL

na Not applicable

nd Not detected

\- Not analyzed

TABLE 2-1
MAXIMUM DETECTION FOR WELLS SAMPLED DURING 1995

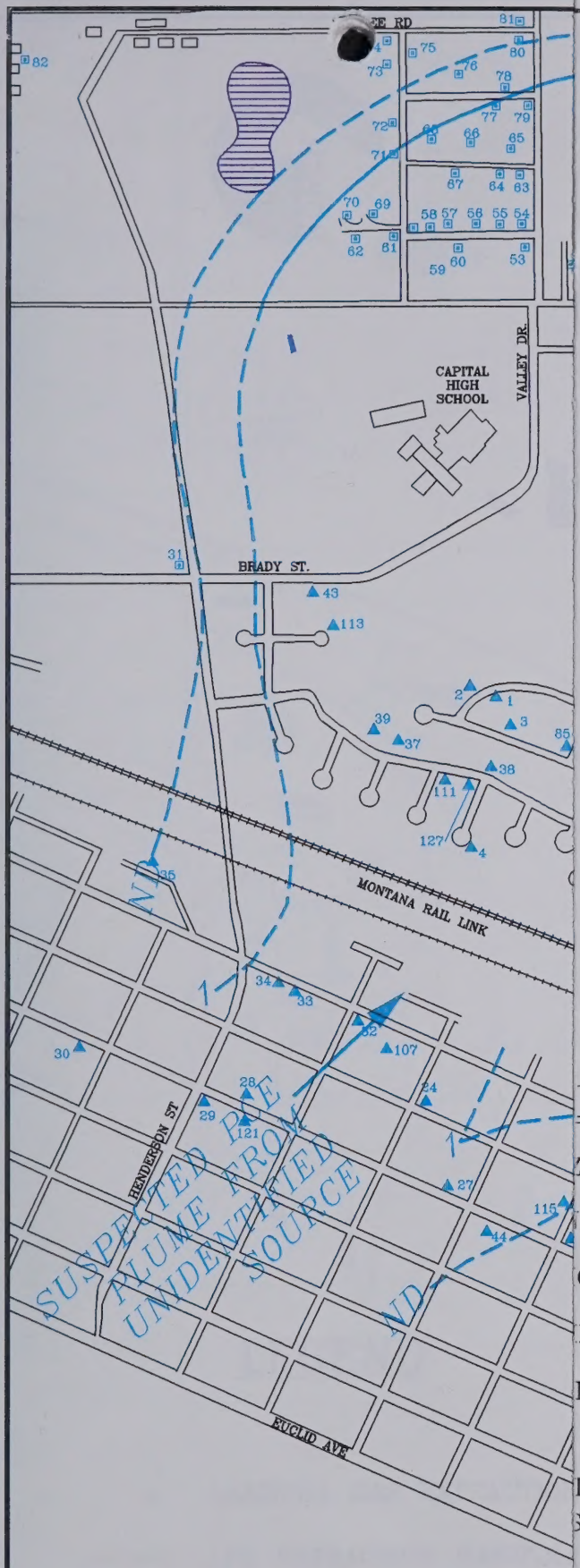
Parameter	Montana MCL (mg/L)	Maximum or Minimum Detection (mg/L)	Up-gradient or cross-gradient								Inside Relative Compliance Boundary					Outside Relative Compliance Boundary										
			83-6 (mg/L)	HL-94-1 (mg/L)	HL-94-2 (mg/L)	HL-94-3 (mg/L)	MPC-3 (mg/L)	MPC-4 (mg/L)	MPC-5 (mg/L)	MPC-6 (mg/L)	EPA1 (mg/L)	MPC-1 (mg/L)	MPC-2 (mg/L)	HL-90-1 (mg/L)	HL-90-2 (mg/L)	I-1 (mg/L)	HL-90-3 (mg/L)	5 (mg/L)	13 (mg/L)	31 (mg/L)	57 (mg/L)	62 (mg/L)	75 (mg/L)	93 (mg/L)	96 (mg/L)	Inf. Gal (mg/L)
Arsenic	0.05	0.007	nd	nd	0.007	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	-	nd	-	-	-	-	-	-	-	-	-
Barium	2.0	0.100	nd	nd	nd	nd	nd	nd	nd	0.100	0.100	nd	-	nd	nd	-	nd	-	-	-	-	-	-	-	-	-
Iron	na	1.990	0.050	nd	nd	nd	0.810	0.180	1.990	nd	0.060	nd	-	nd	nd	-	nd	-	-	-	-	-	-	-	-	-
Selenium	0.05	0.022	nd	nd	nd	nd	0.010	0.022	0.006	nd	nd	nd	-	nd	nd	-	nd	-	-	-	-	-	-	-	-	-
Zinc	na	0.030	nd	nd	nd	nd	nd	0.010	nd	0.010	nd	nd	-	nd	nd	-	0.030	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	0.2000	0.003	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.003	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	0.0070	0.007	nd	nd	nd	nd	nd	nd	nd	nd	0.002	0.007	nd	0.002	0.002	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,2-Dichloropropane	0.0050	0.002	nd	nd	nd	nd	nd	nd	nd	nd	0.002	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Bromodichloromethane	na	0.003	nd	nd	nd	0.003	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Carbon Disulfide	na	0.002	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.002	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Chloroform	na	0.020	nd	0.004	0.004	0.020	nd	nd	nd	nd	0.004	0.002	nd	0.003	nd	nd	0.004	0.002	0.006	0.008	0.002	0.010	nd	0.002	nd	nd
Cis-1,2-Dichloroethene	0.0700	0.002	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.002	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Dichlorodifluoromethane	na	0.002	nd	nd	nd	nd	nd	nd	nd	nd	0.001	0.002	nd	0.001	nd	nd	nd	nd	0.002	nd	0.001	0.001	nd	nd	nd	nd
Methylene Chloride	na	0.001	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.001	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tetrachloroethene	0.0050	**0.024**	nd	nd	nd	nd	nd	nd	nd	nd	**0.024**	**0.014**	nd	**0.012**	nd	nd	nd	0.002	0.003	nd	0.002	0.002	nd	nd	nd	nd
Toluene	1.0	0.002	nd	0.002	nd	0.001	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Trichloroethene	0.0050	0.003	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.003	nd	0.002	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Trichlorofluoromethane	na	0.001	nd	nd	nd	nd	nd	nd	nd	nd	0.001	0.001	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Chloride	na	126.000	23.000	22.000	65.000	22.000	18.000	56.000	13.000	8.000	126.000	51.000	-	30.000	31.000	-	23.000	-	-	-	-	-	-	-	-	-
Cobalt	na	0.020	nd	nd	nd	nd	nd	nd	0.020	nd	nd	nd	-	nd	nd	-	nd	-	-	-	-	-	-	-	-	-
Nickel	na	0.040	nd	nd	nd	nd	0.010	0.020	0.020	0.010	0.040	nd	-	nd	nd	-	nd	-	-	-	-	-	-	-	-	-
Nitrate & Nitrite	10.0	**42.800**	7.590	6.810	6.120	**11.700**	**37.700**	**42.800**	**21.400**	4.920	6.830	**11.700**	-	6.870	1.300	-	6.330	-	-	-	-	-	-	-	-	-
Sulfate	na	1860.000	92.000	131.000	94.000	179.000	1180.000	336.000	1860.000	38.000	144.000	187.000	-	126.000	66.000	-	116.000	-	-	-	-	-	-	-	-	-
Thallium	na	1.200	nd	nd	nd	nd	1.200	nd	nd	nd	nd	nd	-	nd	nd	-	nd	-	-	-	-	-	-	-	-	-
m&p - xylenes	na	0.004	nd	nd	nd	nd	nd	nd	0.004	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
o - xylene	na	0.003	nd	nd	nd	nd	nd	nd	0.003	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Cyanide	na	9.500	nd	nd	nd	0.040	3.420	0.666	9.500	0.036	nd	0.038	-	nd	nd	-	nd	-	-	-	-	-	-	-	-	-

Parameters in **bold** idicate results higher than Montana MCL

na Not applicable

nd Not detected

- Not analyzed



WELL	PCE (μg/L) MCL= 5
HL-90-1	12
HL-90-2	ND
HL-90-3	ND
MPC-1	14
MPC-2	ND
HL-94-1	ND
HL-94-2	ND
HL-94-3	ND
83-6	ND
5	1.8
13	3.1
31	ND
57	1.6
62	1.8
75	ND
93	ND
96	ND
I-1	ND
MPC-3	ND
MPC-4	ND
MPC-5	ND
MPC-6	ND
EPA-1	24
INF.GALLERY	ND

ND = NOT DETECTED

EGEND

ZOMETER

ITORING WELL

GATION WELL

ESTIC WELL

LTRATION GALLERY

ISOCONCENTRATION CONTOUR LINE, IMUM 1995 DETECTIONS IN μg/L SHED WHERE INFERRED)

ERAL DIRECTION OF GROUNDWATER FLOW

REAL DISTRIBUTION OF TRACHLOROETHENE (PCE) OUNDWATER DECEMBER 1995

FIGURE 2-2

PROJECT CODE: CHHL03 UPDATE TIME: 3:40PM
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ydrometrics, Inc. Consulting Engineers, Scientists and Contractors

WELL	PCE (µg/L) MCL= 5
HL-90-1	12
HL-90-2	ND
HL-90-3	ND
MPC-1	14
MPC-2	ND
HL-94-1	ND
HL-94-2	ND
HL-94-3	ND
83-6	ND
5	1.8
13	3.1
31	ND
57	1.6
62	1.8
75	ND
93	ND
96	ND
I-1	ND
MPC-3	ND
MPC-4	ND
MPC-5	ND
MPC-6	ND
EPA-1	24
INF.GALLERY	ND

ND = NOT DETECTED

NORTH

Scale
In Feet
400 0 400 800

CUSTER AVENUE
FOUR GEORGIANS SCHOOL
CAPITAL HIGH SCHOOL
VALLEY DR.
BRADY ST.
BILL ROBERTS MUNICIPAL GOLF COURSE
MONTANA RAIL LINK
BATCH FIELDS
Infiltration Gallery Well
HENDERSON ST
BENTON AVE
TRANSFER STATION
CARROLL COLLEGE
NATIONAL AVE
MONTANA POWER COMPANY
CENTENNIAL PARK
LAST CHANCE GULCH
MEMORIAL PARK
YMCA
ARMORY
EUCLID AVE
LYNDALE AVE
T 10 N

SUSPECTED PCE ALUME FROM UNIDENTIFIED SOURCE

ND

1

5

10

20

LEGEND

- HL-1 ■ PIEZOMETER
- 83-6 ● MONITORING WELL
- I-6 ▲ IRRIGATION WELL
- 80 ▣ DOMESTIC WELL
- INFILTRATION GALLERY
- —5— PCE ISOCONCENTRATION CONTOUR LINE, MAXIMUM 1995 DETECTIONS IN µg/L (DASHED WHERE INFERRED)
- GENERAL DIRECTION OF GROUNDWATER FLOW

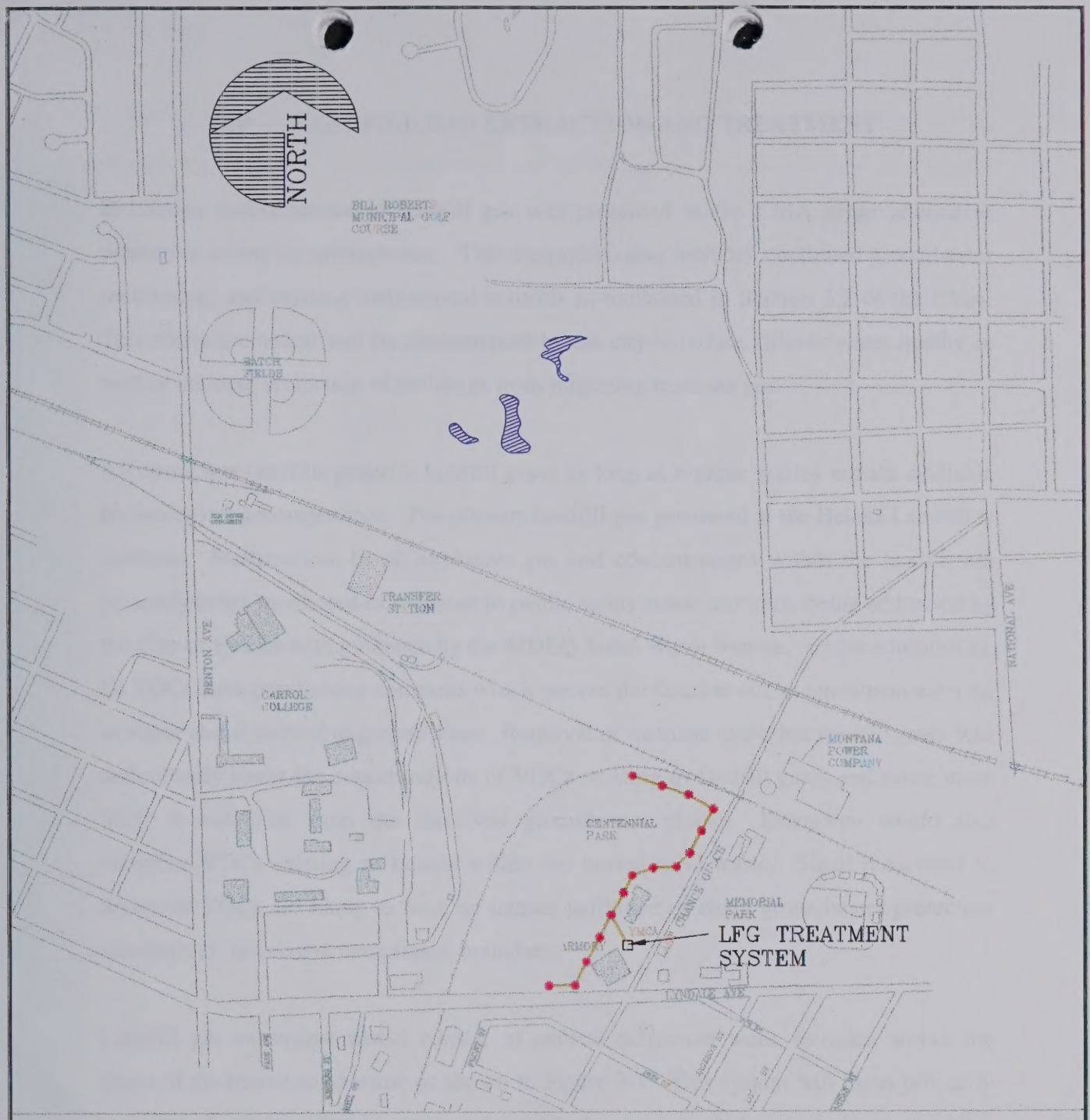
CITY OF HELENA LANDFILL
ADDENDUM TO CORRECTIVE MEASURES ASSESSMENT
HELENA, MONTANA

AREAL DISTRIBUTION OF TETRACHLOROETHENE (PCE) IN GROUNDWATER DECEMBER 1995

FIGURE 2-2

PROJECT CODE: CHHL03 UPDATE TIME: 3:40PM
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Hydrometrics, Inc. Consulting Engineers, Scientists and Contractors



LEGEND

Scale
In Feet
400 0 400 800

- LANDFILL GAS EXTRACTION WELL
- LFG EXTRACTION MANIFOLD

CITY OF HELENA LANDFILL ADDENDUM TO CORRECTIVE MEASURES ASSESSMENT HELENA, MONTANA	**LANDFILL GAS EXTRACTION AND TREATMENT**	**FIGURE** **3-1**

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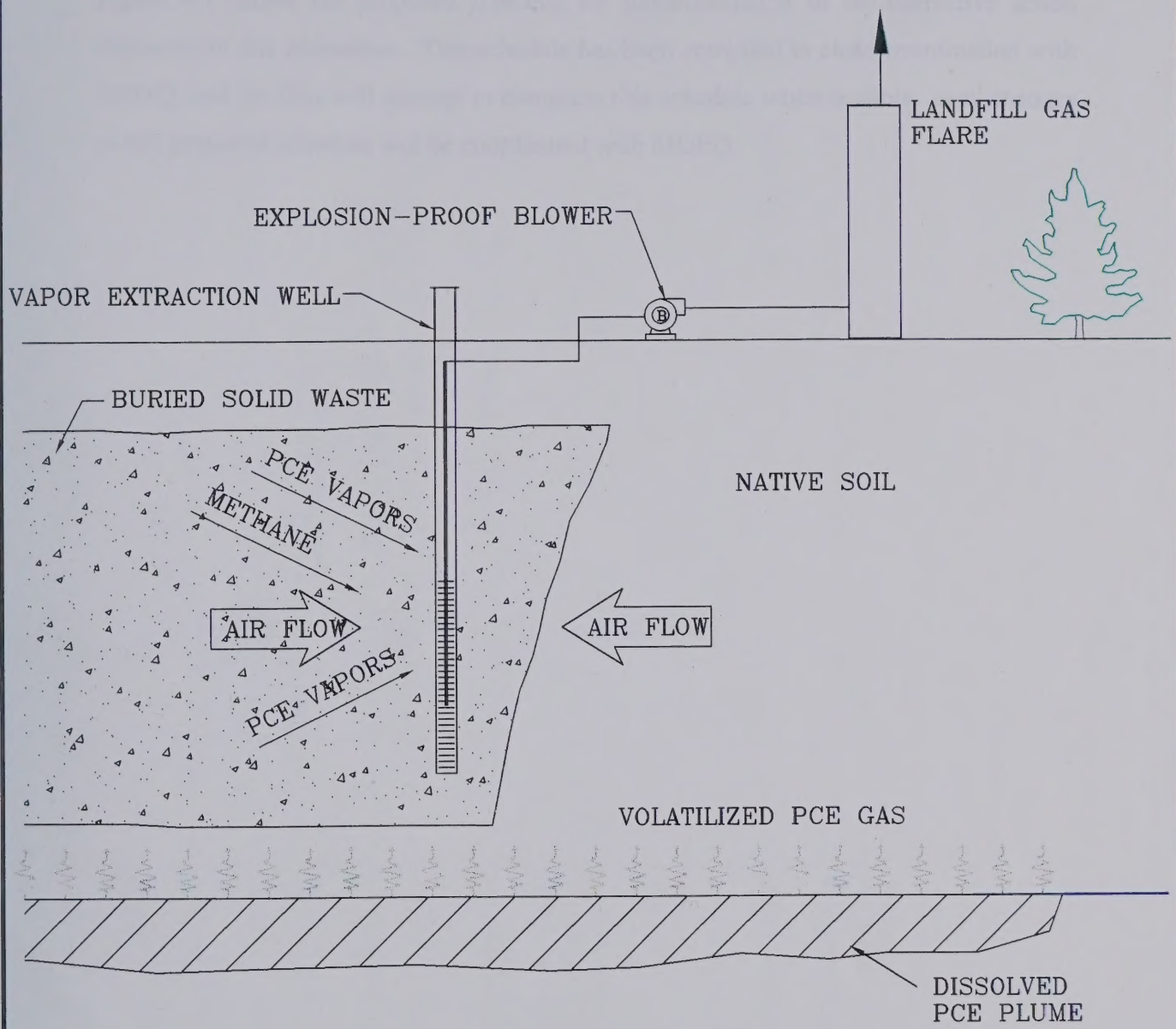
3.0 LANDFILL GAS EXTRACTION AND TREATMENT

Extraction and treatment of landfill gas was presented in the CMA as an alternative corrective action for groundwater. This alternative also includes continued groundwater monitoring, and existing institutional controls as explained in Section 5.2 of the CMA. This corrective action will be implemented by the city to reduce risks to water quality as well as increase protection of buildings from migrating methane gas.

All municipal landfills generate landfill gases as long as organic wastes remain available for biological decomposition. The primary landfill gas generated at the Helena Landfill is methane. Methane can be an explosive gas and concentrations within the landfill are presently being monitored in response to public safety issues currently being addressed by the City of Helena with guidance by the MDEQ Solid Waste Bureau. Under equilibrium, all VOCs have partitioning constants which govern the fraction of the constituent existing as vapor and dissolved in groundwater. Removal of methane and other landfill gases will undoubtedly lower the concentrations of VOCs existing as landfill gases and cause more VOC to volatilize from the dissolved groundwater plume. Extraction would also volatilize VOCs existing as liquids within the buried solid waste. Small reductions in dissolved VOCs are likely to have an impact sufficient to attain groundwater protection standards at the relative compliance boundary.

Landfill gas extraction would consist of several extraction wells installed within the limits of the buried solid waste as shown in Figure 3-1. This system will focus primarily on areas of public safety concern and would also be extended to include the apparent source area for tetrachloroethene contamination. An explosion-proof blower would be used to place a vacuum on these wells. This pressure gradient causes landfill gas to flow to the well and be removed from the landfill area.

Extracted landfill gases are most commonly treated by thermal destruction. This alternative will likely include destruction of landfill gases, including VOCs, in a landfill gas flare or equivalent (Figure 3-2). This treatment method is effective at removing VOCs and is commonly used at solid waste landfills. Further characterization of the amount and composition of the landfill gas present at the Helena Landfill is being performed as part of the extraction system design. The actual location (spacing) of extraction wells, number of wells, and location of the treatment system will also be presented when final design has been completed.



CITY OF HELENA LANDFILL
ADDENDUM TO CORRECTIVE MEASURES ASSESSMENT
HELENA, MONTANA

LANDFILL GAS EXTRACTION SCHEMATIC

FIGURE
3-2

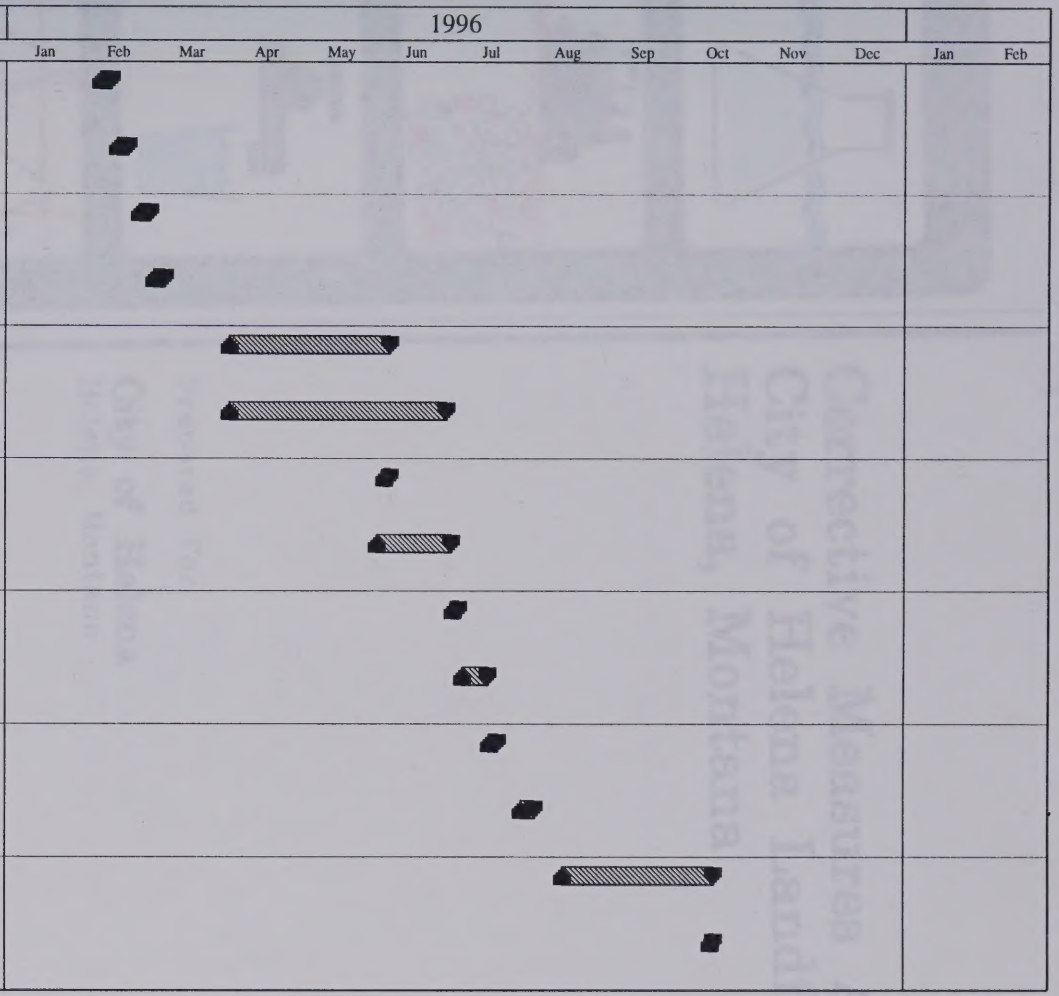


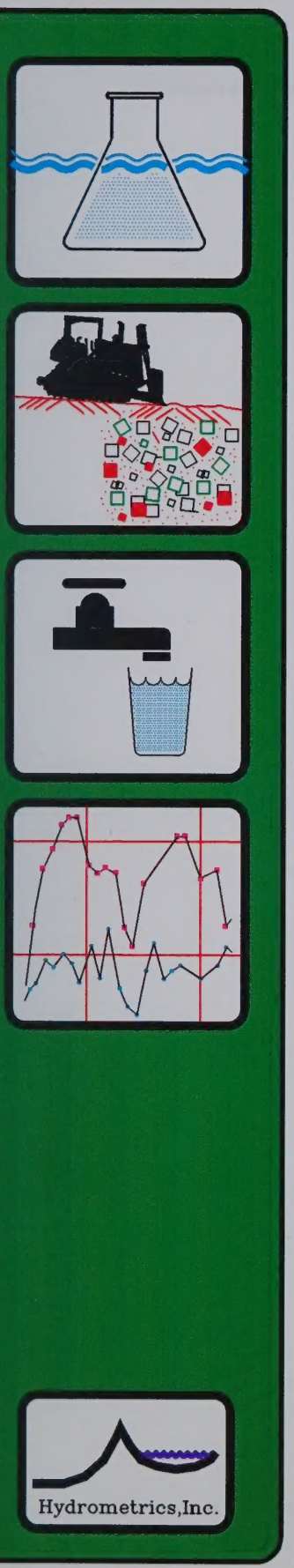
4.0 SCHEDULE FOR IMPLEMENTATION OF CORRECTIVE ACTION

Figure 4-1 shows the proposed schedule for implementation of the corrective action discussed in this addendum. This schedule has been compiled in close coordination with MDEQ, and the City will attempt to compress this schedule when feasible. Any changes to this proposed schedule will be coordinated with MDEQ.

FIGURE 4-1: PROPOSED IMPLEMENTATION SCHEDULE

ID	Name
1	Submit Addendum to CMA to MDEQ
2	Approval of CMA/Addendum by MDEQ
3	Project Meeting with MDEQ
4	Public Meeting on CMA
5	Design of LFG Extraction System
6	Air Permitting for LFG Extraction System
7	Submit LFG Extraction Design to MDEQ
8	Revise/Finalize LFG Extraction Design
9	Approval of Design by MDEQ
10	Prepare Bid Package for System Installation
11	Let Bids
12	Award Contract for Construction
13	Construction of LFG Extraction System
14	LFG System Operational





Corrective Measures Assessment City of Helena Landfill Helena, Montana

Prepared For:

City of Helena
Helena, Montana

Prepared By:

Hydrometrics, Inc.
Consulting Scientists, Engineers and Contractors
Helena, Montana

February 1995

Corrective Measures Assessment
City of Helena Landfill
Helena, Montana

Prepared for

City of Helena
Helena, Montana

Prepared By

Hydrometrics, Inc.
Consulting Scientists, Engineers and Contractors
Helena, Montana

February 1995

CORRECTIVE MEASURES ASSESSMENT

FOR THE HELENA LANDFILL

HELENA MONTANA

Prepared for

Mr. Kim Milburn
Director of Public Works
CITY OF HELENA
Helena, MT 59601

Prepared by
HYDROMETRICS, INC.
2727 Airport Road
Helena, MT 59601

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Montana Department of Health
and Environmental Sciences
Waste Management Division

February 1995

CORRECTIVE MEASURES ASSESSMENT
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APPENDIX A SUMMARY OF WATER QUALITY ANALYSES

CORRECTIVE MEASURES ASSESSMENT

FOR THE HELENA LANDFILL

CITY OF HELENA

1.0 INTRODUCTION

Hydrometrics, Inc. has prepared this Corrective Measures Assessment (CMA) for the Helena Landfill at the request of the City of Helena. This assessment fulfills the requirements set forth in the Administrative Rules of Montana (ARM) 16.14.708 for assessing potential corrective measures for groundwater contamination at landfills in Montana.

The City of Helena has been monitoring the quality of groundwater at and near the landfill as required by the Administrative Rules of Montana since 1989. Samples were taken in May of 1994 and analyzed for the assessment monitoring parameter list specified by ARM 16.14.706. Analytical results indicated that several volatile organic compounds (VOC's) were present in groundwater downgradient from the landfill at statistically significant concentrations above levels in upgradient wells. As a result, the Montana Department of Health and Environmental Sciences (MDHES) has required the City to undertake this assessment of potential corrective measures and to determine a preferred mitigative alternative which will be protective of human health and the environment.

1.1 PURPOSE AND ORGANIZATION OF REPORT

This report has been prepared in accordance with ARM 16.14.708, which provides the regulatory requirements for the Corrective Measures Assessment. In addition, this report

may be used to present the alternative selection process and selected alternative to concerned public citizens.

The remaining portion of Section 1.0 of this report presents a physical and hydrogeological description of the Helena Landfill, and a brief site history. Section 2.0 characterizes the extent and nature of contamination at the site. Section 3.0 presents the objectives of the selected corrective action. Section 4.0 details the identification and initial screening of corrective measure technologies. Section 5.0 is a description of the technologies which have passed initial screening and their assemblage into potential alternatives. Section 6.0 is a comprehensive evaluation of the applicable corrective alternatives as required by Administrative Rules of Montana, and Section 7.0 presents the preferred alternative and the justification for the selection of this alternative.

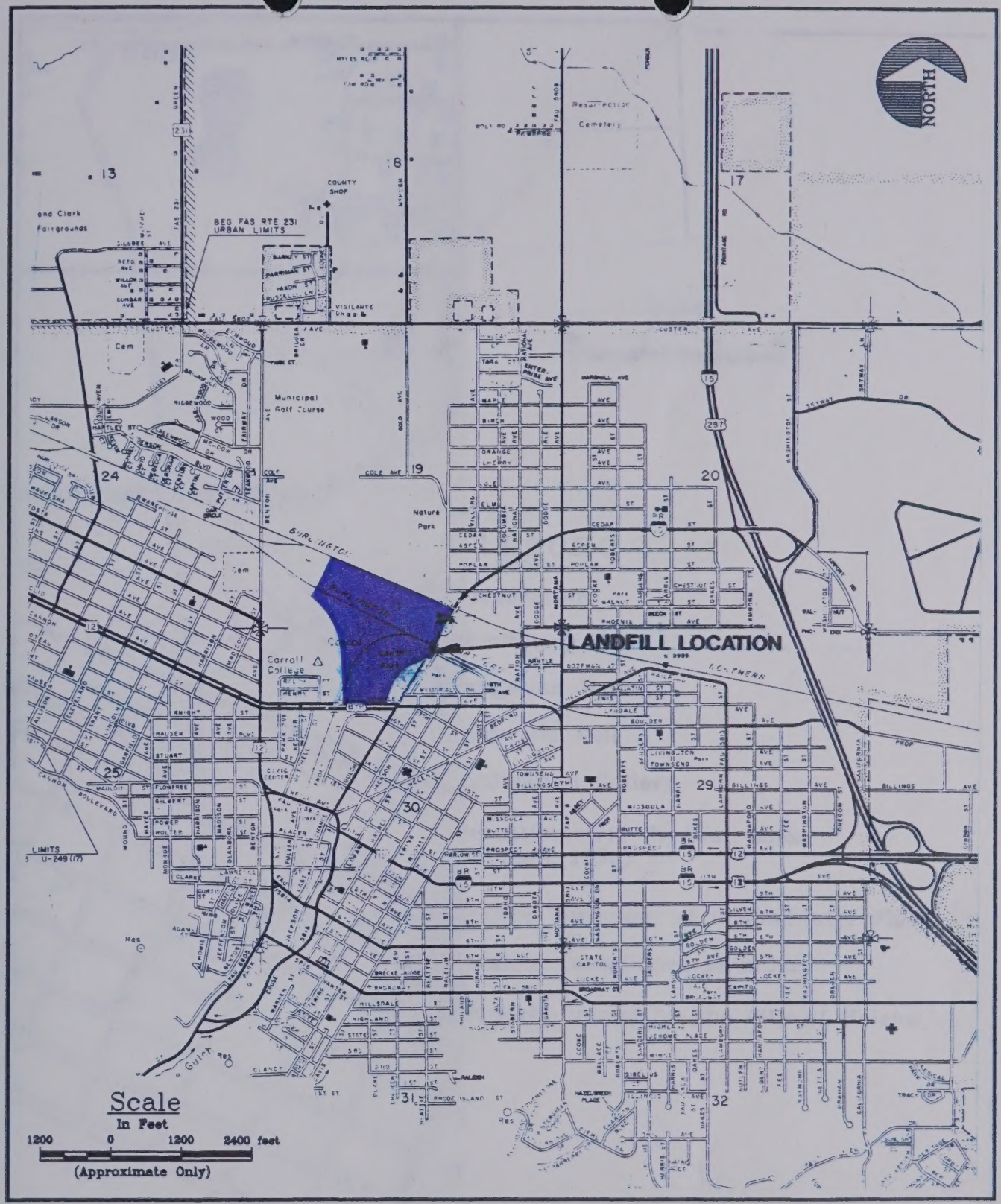
1.2 SITE DESCRIPTION

The Helena Landfill comprises three landfilled areas totaling approximately 37 acres and is located in T10N, R3W, Sections 19 and 30 (Figure 1-1). For the purpose of this CMA, the three landfilled areas at the site will be considered collectively. The Helena Landfill is bordered to the west by Carroll College and Elk River Concrete, to the north by Bill Roberts Municipal Golf Course, to the east by Memorial Park and to the south by Lyndale Avenue (Figure 1-2).

Figure 1-2 also shows the landfill area, including the City's property boundary, and the relative compliance boundary (RCB) for groundwater evaluation at the landfill. The RCB is defined in ARM 16.14.708 as 150 meters beyond the waste management unit boundary on land owned by the owner of the disposal unit.

1.3 SITE HISTORY

This area has been reportedly receiving municipal waste since the late 1800's when open burning was the primary disposal method. In 1970, sanitary landfill regulations were promulgated and all open burning ceased (EPA, 1989). The landfill was closed in 1994.



Proj. No: CHHL03
Dwg. No: 52895H01
Drawn By: 0083
Last Update: 2/2/95
Ref. Dwg:
Rev. Date:

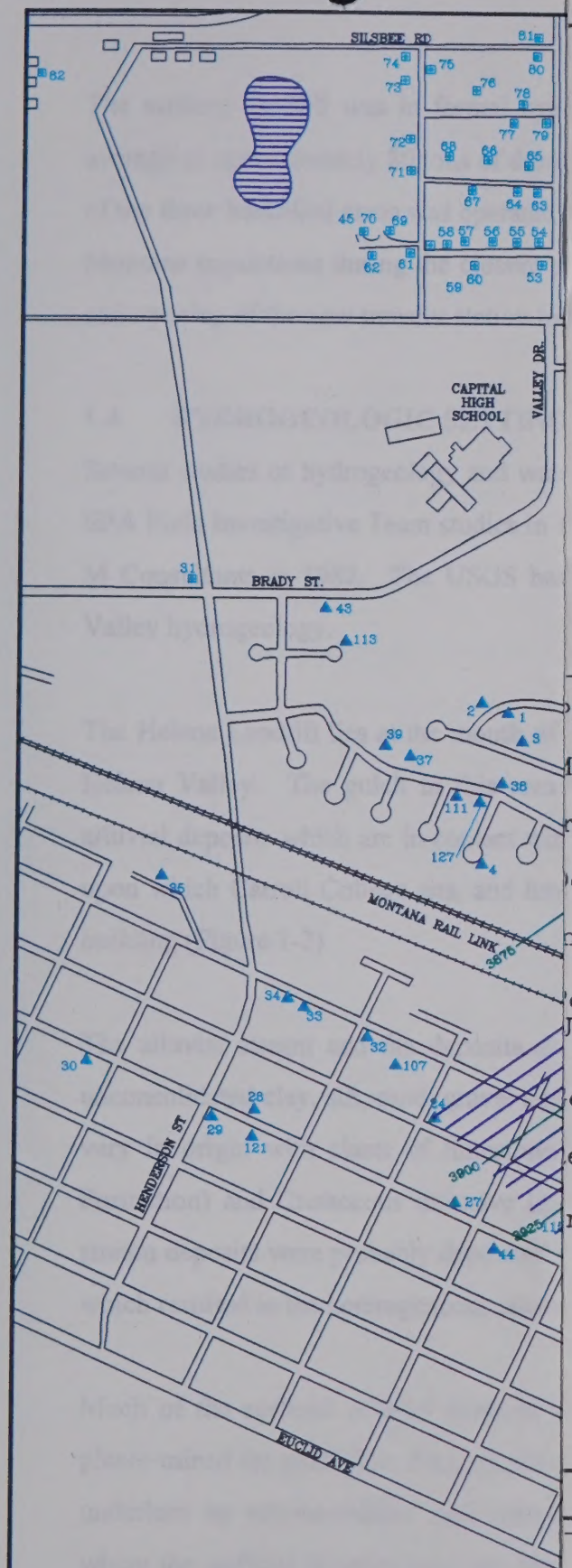
Hydrometrics, Inc.

Figure 1-1

Vicinity Map

City of Helena Landfill
Helena, Montana





NORTH

Scale
In Feet
400 0 400 800

Legend

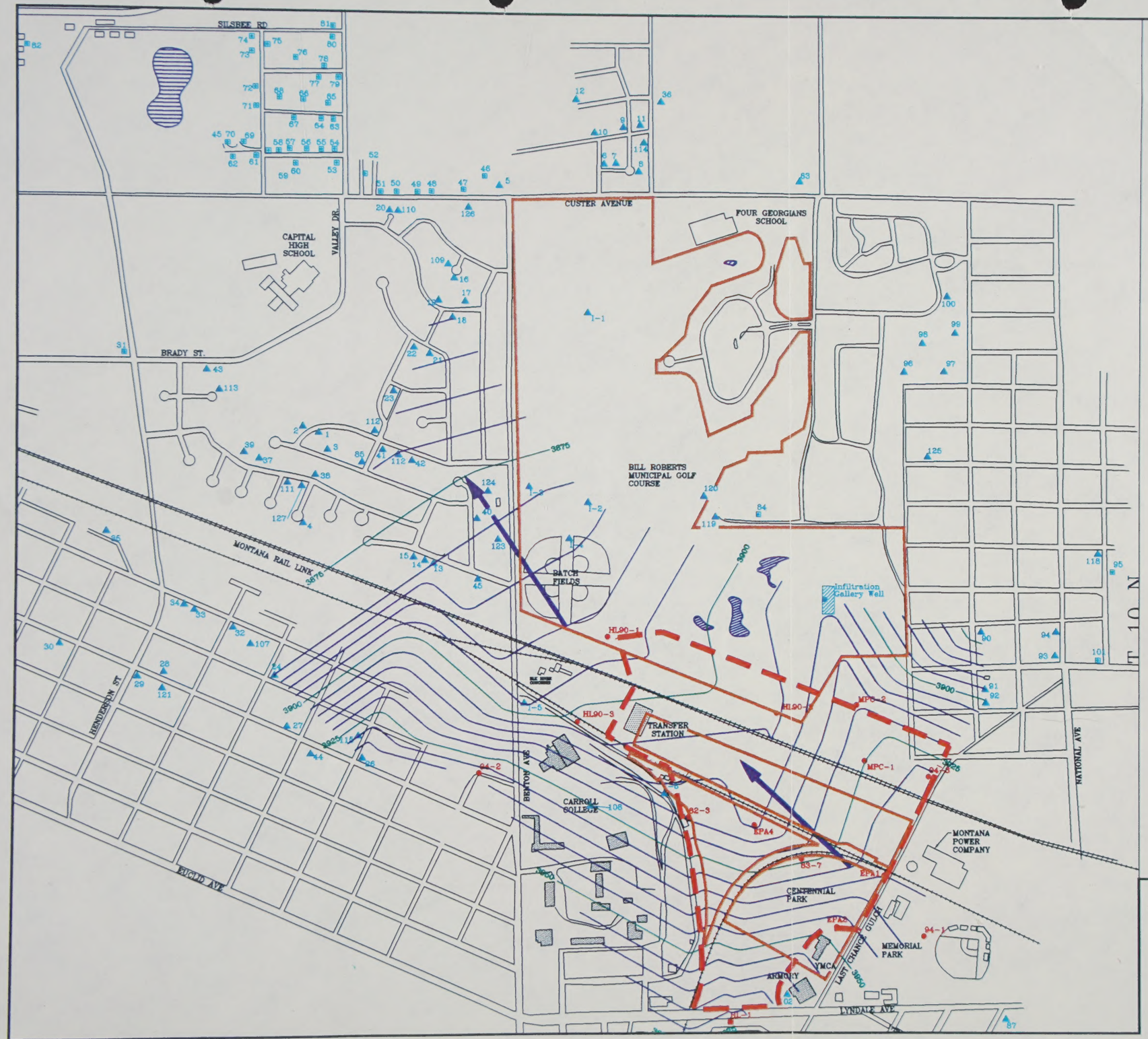
- Piezometer
- Monitoring Well
- Irrigation Well
- Domestic Well
- Infiltration Gallery
- Potentiometric Contour Lines (January 1995)
- General Direction of Groundwater Flow
- Relative Compliance Boundary
- Property Owned by the City of Helena

Hydrometrics, Inc.

Figure 1-2
Study Area and
uary 1995 Potentiometric Surface
City of Helena Landfill
Helena, Montana

Proj. No: CHHL03 Drawn By: 0083
Dwg. No: 52895010 Last Update: 2/1/95





NORTH

Scale
In Feet
400 0 400 800

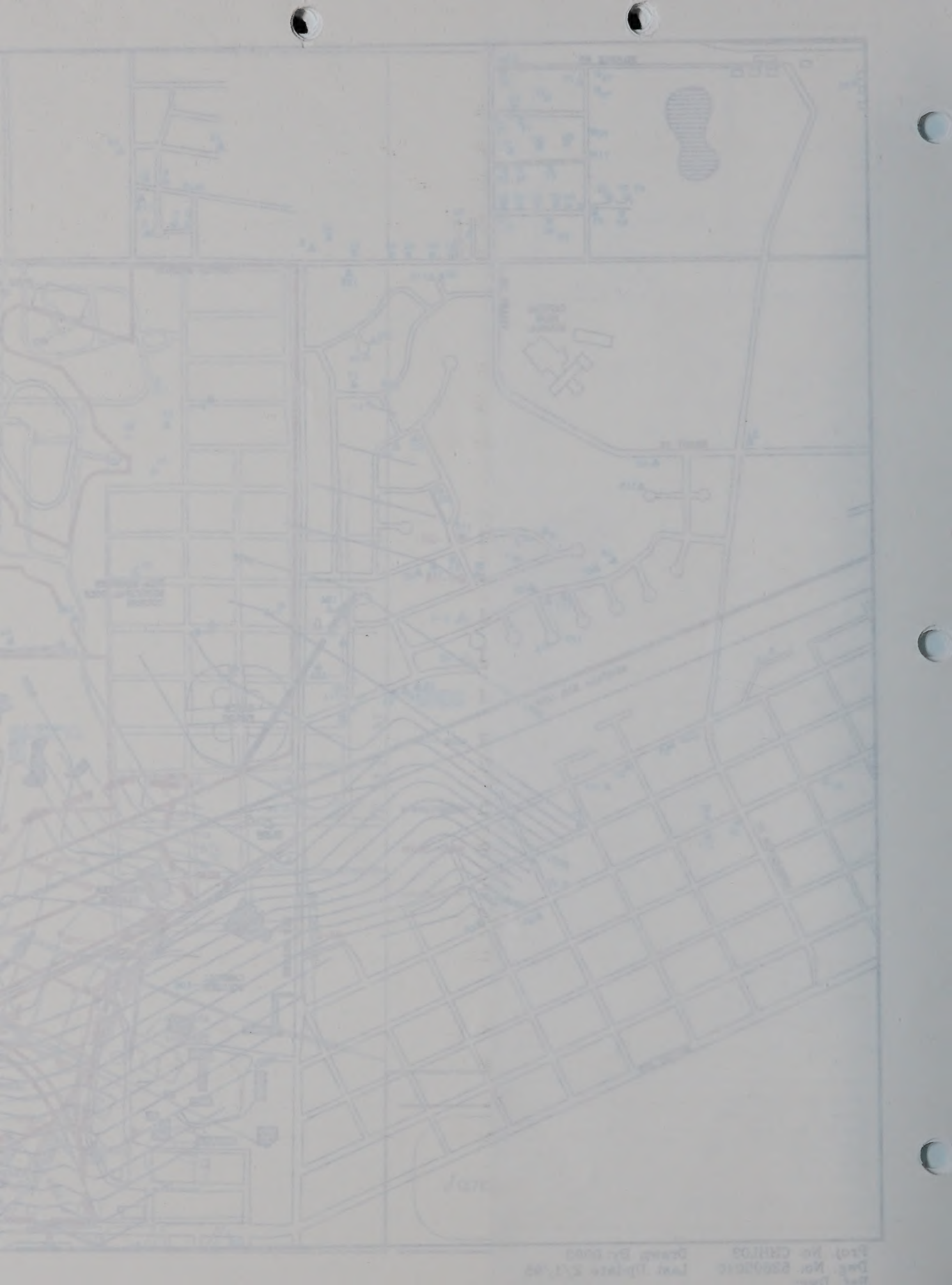
Legend

- HL-1 ■ Piezometer
- 83-6 ● Monitoring Well
- 1-6 ▲ Irrigation Well
- 80 ▣ Domestic Well
- Infiltration Gallery
- 3900 Potentiometric Contour Lines (January 1995)
- General Direction of Groundwater Flow
- Relative Compliance Boundary
- Property Owned by the City of Helena

Hydrometrics, Inc.

Figure 1-2
Study Area and January 1995 Potentiometric Surface
City of Helena Landfill
Helena, Montana

Proj. No: CHHL03 Drawn By: 0083
Dwg. No: 52895010 Last Update: 2/1/95
Ref. Dwg:



The sanitary landfill was in formal operation since the early 1970's and accepted an average of approximately 80 tons of domestic waste per day (Hydrometrics, 1991). Each of the three landfilled areas was operated independently and was closed as per the current Montana regulations during the closure period. Final closure of the newest landfill area and opening of the new transfer station took place in 1994.

1.4 HYDROGEOLOGIC SETTING

Several studies of hydrogeology and water quality have taken place at the site including EPA Field Investigative Team studies in 1987 and 1989, Hydrometrics in 1990 and F and M Consultants in 1982. The USGS has also conducted several studies of the Helena Valley hydrogeology.

The Helena Landfill lies at the mouth of Last Chance Gulch at the southern edge of the Helena Valley. The gulch in this area is underlain with quaternary and tertiary age alluvial deposits which are in contact with igneous bedrock which comprises the mound upon which Carroll College sits, and limestone deposits below the YMCA and Armory building (Figure 1-2).

The alluvial stream and fan deposits are composed of layers, lenses and mixtures of unconsolidated clay, silt, sand, gravel and cobbles (Coffin, 1971). The alluvial materials vary in origin with clasts of limestone and dolomite (Precambrian Helena Dolomite Formation) and Cretaceous intrusive igneous clasts being common. Alluvial fan and stream deposits were probably deposited by an interconnecting network of paleochannels which resulted in the heterogeneous alluvium at the mouth of Last Chance Gulch.

Much of the surficial alluvial deposits in the area have been extensively dredged and placer-mined for gold. The dredged material varies in thickness from 25 to 50 feet and is underlain by unconsolidated and semi-consolidated Tertiary sediments, and alluvium where the surficial deposits were too deep to excavate during the dredging process. The

tertiary sediments vary in thickness from relatively thin along the valley edges to several hundred feet in the center of the valley (Hydrometrics, 1982).

Groundwater at and near the Helena Landfill occurs in both the alluvium and the underlying bedrock. North of the landfill, groundwater also occurs in dredge piles left from historic mining activities, and in the semi-consolidated tertiary sediments. Because of the heterogeneous nature of the geology, most groundwater flow is likely through a complex network of higher permeable zones and layers.

An inventory of monitoring wells and private irrigation and domestic wells is shown on Table 1-1. These wells are shown on Figure 1-2 which also contains a potentiometric map showing the groundwater table during January, 1995. Groundwater flow in the landfill area is generally north/northwest with an average hydraulic gradient of about 0.03 ft/ft. Depth to groundwater across the landfill area varies from approximately 20 to 50 feet. Groundwater velocity in the vicinity of the landfill is estimated at 2 to 3 feet per day (Hydrometrics, 1990).

A more detailed description of the Helena Landfill hydrogeology is contained in "Hydrogeologic Investigation of the City of Helena Landfill" (Hydrometrics, 1990).

TABLE 1-1: HELENA LANDFILL AREA WELL INVENTORY - JANUARY 1995

WELL NUMBER	ADDRESS	OWNER	DEPTH	PERFORATED ZONE
1	230 Meadow Dr.	G. Amestoy	100	---
2	233 Meadow Dr.	C. Colarchic	---	---
3	227 Greenwood	A. Holzwarth	---	44-64
4	5 Deborah Ct.	T. Johnson	100	---
5	350 Custer Ave.	S. Colvin	80	60-80
6	3119 Bridger	J. Garman	100	70-100
7	454 Vigilante	R. Stenquist	51	---
8	3107 Vigilante	C. Knutson	101	80-100
9	3130 Vigilante	C. Tielking	61	---
10	448 Russell	L. Peterman	---	---
11	472 Russell	J. Zimmerman	---	---
12	448 Paxon	M. Parriman	68	60-68
13	102 Oakwood	E. Johnson	118	78-118
14	104 Oakwood	K. Rogers	115	70-110
15	106 Oakwood	E. Darfler	140	90-140
16	3 Parr Court	C. Tilzey	65	54-64
17	105 Wedgewood	F. Robinson	---	---
18	108 Wedgewood	B. Hartman	---	---
19	119 Wedgewood	D. Clark	115	90-115
20	3 Terry Court	H. Peterson	120	80-120
21	146 Briarwood	R. Karp	52	12-52
22	154 Briarwood	R. Burger	---	---
23	114 Ridgewood	T. Berry	75	55-75
24	1130 Waukesha	E. Johnson	180	100-180
25	1703 Waukesha	M. Carmichael	---	---
26	932 Peosta	G. Daly	300	---
27	1110 Peosta	S. McCann	360	---
28	1314 Peosta	M. Johnson	278	170-270
29	1331 Peosta	R. Guse	300	120-290
30	1611 Peosta	R. Brohman	135	---
31	1430 Brady	D. Gardner	101	75-95
32	1815 Brady	W. Routzahn	220	140-220
33	1317 Hudson	C. Engstedt	---	---
34	1325 Hudson	K. Erickson	118	78-118
35	1427 Broadwater Cir.	Broadwater Vill.	215	95-215
36	3203 Cooney	Kalamity Bros.	45	38-45
37	235 Anderson Blvd.	G. South	100	40-100
38	227 Anderson Blvd.	T. Tillo	100	40-100
39	239 Anderson Blvd.	W. Kotan	82	58-82

--- No Information, Inventory based on DNRC and City of Helena Records.
528\045\950203\H:\528\CMA\T1-1CMA.XLS

TABLE 1-1: HELENA LANDFILL AREA WELL INVENTORY - JANUARY 1995

40	2509 Teakwood	E. Hartman	70	50-70
41	124 Meadow	Strasko	73	53-73
42	112 Meadow	W. Hill	72	52-72
43	246 Brady	Frisch	80	40-80
44	1023 Peosta	Cumley	65	55-65
45	94 Oakwood	Hanson	116	---
46	320 Custer	Colvin	---	---
47	328 Custer	Robinson	---	---
48	308 Custer	C.A. Barbeau	79	---
49	304 Custer	---	---	---
50	226 Custer	---	---	---
51	220 Custer	E. Hartze	64	---
52	Custer & Grn. Meadow	---	---	---
53	121 Dunbar	G. Kercher	---	---
54	122 Dunbar	S. Hitchcock	67	57-67
55	114 Dunbar	---	---	---
56	112 Dunbar	G. Francis	54	---
57	108 Dunbar	Bacon	---	---
58	106 Dunbar	---	---	---
59	100,102 Dunbar	Stolp	---	---
60	No Address - Trailers	---	---	---
61	78 Dunbar	J. Hayes	72	---
62	76 Dunbar	J. Bridges	80	60-80
63	110 Willow	G. Milairn	---	---
64	121 Willow	B. Bonogofsky	82	58-82
65	110 Willow	Pool	85	---
66	108 Willow	---	---	---
67	105 Willow	O'Neal	100	60-100
68	104 Willow	J. Creach	80-100	---
69	19 Willow	Horsecienda Hotel	---	---
70	11 Willow	Gardner	55	---
71	3204 Mitchell	Chamberlain	---	---
72	3208 Mitchell	Hall	---	---
73	3212 Mitchell	Tovey	72	52-72
74	3216 Mitchell	Allison	---	---
75	104 Reed	J. Creach	70	22-70
76	Trailer Court on Reed	---	---	---
77	115 Reed	---	---	---
78	120 Reed	W. Cole	50	42-50
79	SW Corner Grn Mdw/Reed	---	---	---
80	3280 Green Meadow	Trails West	---	---

--- No Information, Inventory based on DNRC and City of Helena Records.
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TABLE 1-1: HELENA LANDFILL AREA WELL INVENTORY - JANUARY 1995

81	3300 Green Meadow	G. M. Market	---	---
82	County Fairgrounds	Fairgrounds	---	---
83	610 W. Custer	AAA Car Wash	---	---
84	500 Cole Ave.	---	---	---
85	210 Harwood	Ralston	75	15-75
86	15 Reed	C. Bryant	72	---
87	1055 N. Warren	Peterson	---	---
90	2131 Villard	K. Collins	---	---
91	2009 Villard	P. Higgins	---	---
92	2005 Villard	P. Rowsey	---	---
93	932 Aspen	R. Hecht	---	---
94	933 Cedar	N. Swanson	---	---
HL-90-1	Helena Landfill Area	City of Helena	60	40-60
HL-90-2	Helena Landfill Area	City of Helena	68	60-68
HL-90-3	Helena Landfill Area	City of Helena	79	59-79
83-6	Helena Landfill Area	City of Helena	25	19-23
83-7	Helena Landfill Area	City of Helena	40	32-37
82-1	Helena Landfill Area	City of Helena	40	14-34
82-2	Helena Landfill Area	City of Helena	43	23-43
82-3	Helena Landfill Area	City of Helena	83	43-83
82-4	Helena Landfill Area	City of Helena	79	44-74
HL-1	Helena Landfill Area	EPA	---	---
HL-2	Helena Landfill Area	EPA	---	---
HL-5	Helena Landfill Area	EPA	---	---
HL-6	Helena Landfill Area	EPA	---	---
HL-7	Helena Landfill Area	EPA	---	---
EPA1	Helena Landfill Area	EPA	54.5	39.5-54.5
EPA2	Helena Landfill Area	EPA	55.1	40.1-55.1
EPA3	Helena Landfill Area	EPA	95	85-95
EPA4	Helena Landfill Area	EPA	76.2	66.2-76.2
I-1	Bill Roberts Golf Course	Golf Course	146	35-95
I-2	Bill Roberts Golf Course	Golf Course	---	---
I-3	Bill Roberts Golf Course	Golf Course	220	71-170 (Zones)
I-4	Bill Roberts Golf Course	Batch Fields	156	60-156
I-5	Bill Roberts Golf Course	Carroll College	550	100-550
I-6	Bill Roberts Golf Course	Carroll College	320	100-320
Inf. Gall.	Bill Roberts Golf Course	Golf Course	---	---
95	2315 Dodge Ave.	E. McHugh	---	---
96	3000 Villard	McHugh Mobile Home	---	---
97	3000 Villard	McHugh Mobile Home	---	---
98	3000 Villard	McHugh Mobile Home	---	---

--- No Information, Inventory based on DNRC and City of Helena Records.
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TABLE 1-1: HELENA LANDFILL AREA WELL INVENTORY - JANUARY 1995

99	3000 Villard	McHugh Mobile Home	---	---
100	3000 Villard	McHugh Mobile Home	---	---
101	2101 N. Montana	---	---	---
102	1100 N. Main	Military Affairs	---	---
103	1624 Hollins	---	---	---
104	1701 Hollins	---	---	---
105	1716 Hollins	---	---	---
107	1215 Hudson	S. Puhek	---	---
108	1977 N. Benton	Carroll College	---	---
109	2 Parr Crt.	J. Mc Cabe	---	---
110	2 Terry Crt.	L. Williams	---	---
111	8 Rebecca Crt.	D. Tillo	---	---
112	116 Meadow Dr.	B. Armstrong	---	---
113	244 Hartley	T. Hurtle	---	---
114	3115-15 Vigilante Dr.	J. Willard	---	---
115	1718 Lincoln	H. Pembroke	---	---
116	1019 Logan	E.M. Netzer	---	---
117	1019 Logan	E.M. Netzer	---	---
118	1029 Cole Ave.	D. Alm	---	---
119	300 Cole Ave.	L. Palmer	---	---
120	300 Cole Ave.	L. Palmer	---	---
121	1311 Peosta	L. Lloyd	---	---
122	1800 Wilder	R. Link	---	---
123	2190 N. Benton	B. Hainlin	---	---
124	2200 N. Benton	J. Mc Kinnon	---	---
125	718 Orange	R. Glueckert	---	---
126	603 Custer	Video Playtime	---	---
127	1 Deborah Crt.	R. Grovom	---	---

--- No Information, Inventory based on DNRC and City of Helena Records.
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2.0 CONTAMINANT ASSESSMENT

This section characterizes the extent and degree of groundwater contamination present at and downgradient from the landfill site. Individual summaries which comprise a thorough characterization of potentially hazardous substances and the associated risks include:

- Groundwater Protection Standards
- Contaminants of Concern
- Contaminant Fate and Transport
- Risk to Human Health and the Environment

2.1 NATURE AND EXTENT OF CONTAMINATION

The City of Helena has performed extensive groundwater monitoring to determine the nature and extent of groundwater contamination associated with the landfill. An initial hydrogeological characterization was presented in 1990 (Hydrometrics, 1990). Several corrective measures have already been implemented by the City since submission of the initial characterization (i.e., closing of the landfill, clay cover on newest landfilled area, and extension of the storm drain north of the landfill). Therefore, the characterization of the nature and extent of contamination presented in this summary focuses on the most recent data obtained during the four sampling events in 1994.

Four separate sampling events were conducted during 1994. Samples were collected from 27 wells, four of which are either up-gradient or cross-gradient from the landfill area. Groundwater samples collected were analyzed for over 250 chemical constituents potentially found in landfill leachate. Sample results indicated a detection of 24 potential Table 1 or Table 2 (ARM 16.14.706) contaminants. Table 2-1 lists the maximum concentration of each constituent detected during 1994. Of the 27 wells sampled, 21 chemicals were detected in six or fewer wells. Three volatile organic compounds (VOCs) were detected in 14 or more wells:

- chloroform,
- dichlorodifluoromethane,
- tetrachloroethene.

Parameter	Montana MCL (mg/L)	Maximum Detection (mg/L)	Up-gradi		undary							
			83-6 (mg/L)	HL-94- (mg/L)	52 (mg/L)	57 (mg/L)	59 (mg/L)	62 (mg/L)	75 (mg/L)	84 (mg/L)	93 (mg/L)	96 (mg/L)
Arsenic	0.05	0.0070	nd	nd	-	-	-	-	-	-	-	-
Barium	2.0	0.1000	nd	nd	-	-	-	-	-	-	-	-
Iron	na	0.0900	0.0900	nd	-	-	-	-	-	-	-	-
Selenium	0.05	0.0270	nd	nd	-	-	-	-	-	-	-	-
Zinc	na	0.1500	0.0300	nd	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	0.2000	0.0041	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	0.0070	**0.0073**	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,2-Dichloropropane	0.0050	0.0028	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Bromodichloromethane	na	0.0170	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Bromoform	na	0.0150	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Carbon Disulfide	na	0.0021	nd	nd	nd	0.0021	nd	nd	nd	nd	nd	nd
Chloroform	na	0.0620	0.0014	0.0042	0.0051	0.0018	0.0015	0.0071	nd	nd	nd	nd
Cis-1,2-Dichloroethene	0.0700	0.0024	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Dibromochloromethane	na	0.0290	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Dichlorodifluoromethane	na	0.0044	nd	nd	0.0014	0.0012	0.0013	0.0022	nd	nd	nd	nd
Methylene Chloride	na	0.0021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tetrachloroethene	0.0050	**0.0410**	nd	nd	0.0019	0.0015	0.0014	0.0027	nd	nd	nd	nd
Toluene	1.0000	0.0062	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Trichloroethene	0.0050	0.0031	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Trichlorofluoromethane	na	0.0030	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Trans-1,4-Dichloro-2-Butene	na	0.0020	nd	nd	-	nd	nd	nd	nd	nd	nd	nd
Bis (2-ethyhexyl) Phthalate	0.0060	**0.0100**	nd	**0.0100**	-	-	-	-	-	-	-	-
Cyanide	na	0.0470	nd	nd	-	-	-	-	-	-	-	-
Sulfide	na	0.0400	nd	nd	-	-	-	-	-	-	-	-

Parameters in **bold** idicate results higher than Montana MCL

na Not applicable

nd Not detected

- Not analyzed

TABLE 2-1
MAXIMUM DETECTION FOR WELLS SAMPLED DURING 1994

Parameter	Montana MCL (mg/L)	Maximum Detection (mg/L)	Up-gradient			Cross-gradient	Inside Relative Compliance Boundary					Outside Relative Compliance Boundary																	
			83-6 (mg/L)	HL-94-1 (mg/L)	HL-94-2 (mg/L)	28 (mg/L)	EPA1 (mg/L)	MPC-1 (mg/L)	MPC-2 (mg/L)	HL-90-1 (mg/L)	HL-90-2 (mg/L)	I-1 (mg/L)	I-2 (mg/L)	I-3 (mg/L)	HL-90-3 (mg/L)	HL-94-3 (mg/L)	5 (mg/L)	13 (mg/L)	31 (mg/L)	40 (mg/L)	45 (mg/L)	51 (mg/L)	52 (mg/L)	57 (mg/L)	59 (mg/L)	62 (mg/L)	75 (mg/L)	84 (mg/L)	93 (mg/L)	96 (mg/L)
Arsenic	0.05	0.0070	nd	nd	0.0070	-	nd	nd	-	nd	nd	-	-	-	nd	nd	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium	2.0	0.1000	nd	nd	nd	-	0.1000	nd	-	nd	nd	-	-	-	0.1000	nd	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron	na	0.0900	0.0900	nd	nd	-	nd	nd	-	nd	0.0300	-	-	-	nd	nd	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium	0.05	0.0270	nd	nd	0.0270	-	nd	nd	-	nd	nd	-	-	-	nd	nd	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc	na	0.1500	0.0300	nd	nd	-	0.0200	0.0200	-	0.0900	0.1500	-	-	-	0.0700	nd	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	0.2000	0.0041	nd	nd	nd	nd	nd	nd	nd	0.0041	nd	nd	nd	0.0017	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	0.0070	**0.0073**	nd	nd	nd	nd	0.0036	**0.0073**	nd	0.0028	0.0032	nd	nd	nd	0.0010	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,2-Dichloropropane	0.0050	0.0028	nd	nd	nd	nd	0.0028	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Bromodichloromethane	na	0.0170	nd	nd	nd	0.0170	nd	nd	nd	nd	nd	nd	0.0011	nd	nd	0.0012	nd	nd	nd	nd	0.0015	nd	nd	nd	nd	nd	nd	nd	nd
Bromoform	na	0.0150	nd	nd	nd	0.0150	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Carbon Disulfide	na	0.0021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.0012	nd	nd	0.0021	nd	nd	nd	nd	nd
Chloroform	na	0.0620	0.0014	0.0042	0.0620	0.0130	0.0061	0.0025	nd	0.0035	nd	nd	0.0430	0.0026	0.0047	0.0130	0.0016	0.0062	0.0080	0.0057	0.0200	0.0047	0.0051	0.0018	0.0015	0.0071	nd	nd	nd	nd
Cis-1,2-Dichloroethene	0.0700	0.0024	nd	nd	nd	nd	0.0010	0.0018	nd	nd	nd	nd	nd	nd	0.0024	nd	nd	nd	nd	0.0014	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Dibromochloromethane	na	0.0290	nd	nd	nd	0.0290	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Dichlorodifluoromethane	na	0.0044	nd	nd	nd	nd	0.0044	0.0034	nd	0.0038	0.0013	nd	0.0018	0.0030	nd	nd	nd	0.0022	nd	0.0020	nd	0.0022	0.0014	0.0012	0.0013	0.0022	nd	nd	nd	nd
Methylene Chloride	na	0.0021	nd	nd	nd	nd	nd	nd	nd	0.0021	nd	nd	nd	0.0012	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tetrachloroethene	0.0050	**0.0410**	nd	nd	nd	**0.0052**	**0.0410**	**0.0130**	nd	**0.0200**	nd	nd	0.0013	0.0042	0.0019	nd	0.0012	0.0032	nd	**0.0051**	0.0016	0.0016	0.0019	0.0015	0.0014	0.0027	nd	nd	nd	nd
Toluene	1.0000	0.0062	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.0013	0.0042	nd	nd	nd	0.0062	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Trichloroethene	0.0050	0.0031	nd	nd	nd	nd	0.0022	0.0031	nd	0.0020	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Trichlorofluoromethane	na	0.0030	nd	nd	nd	nd	0.0030	0.0020	nd	0.0014	nd	nd	nd	0.0015	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Trans-1,4-Dichloro-2-Butene	na	0.0020	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.0020	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd	nd
Bis (2-ethyhexyl) Phthalate	0.0060	**0.0100**	nd	**0.0100**	nd	-	nd	nd	-	nd	nd	-	-	-	nd	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyanide	na	0.0470	nd	nd	nd	-	nd	0.0400	-	nd	nd	-	-	-	nd	0.0470	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulfide	na	0.0400	nd	nd	nd	-	nd	0.0400	-	nd	nd	-	-	-	nd	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Parameters in **bold** idicate results higher than Montana MCL

na Not applicable

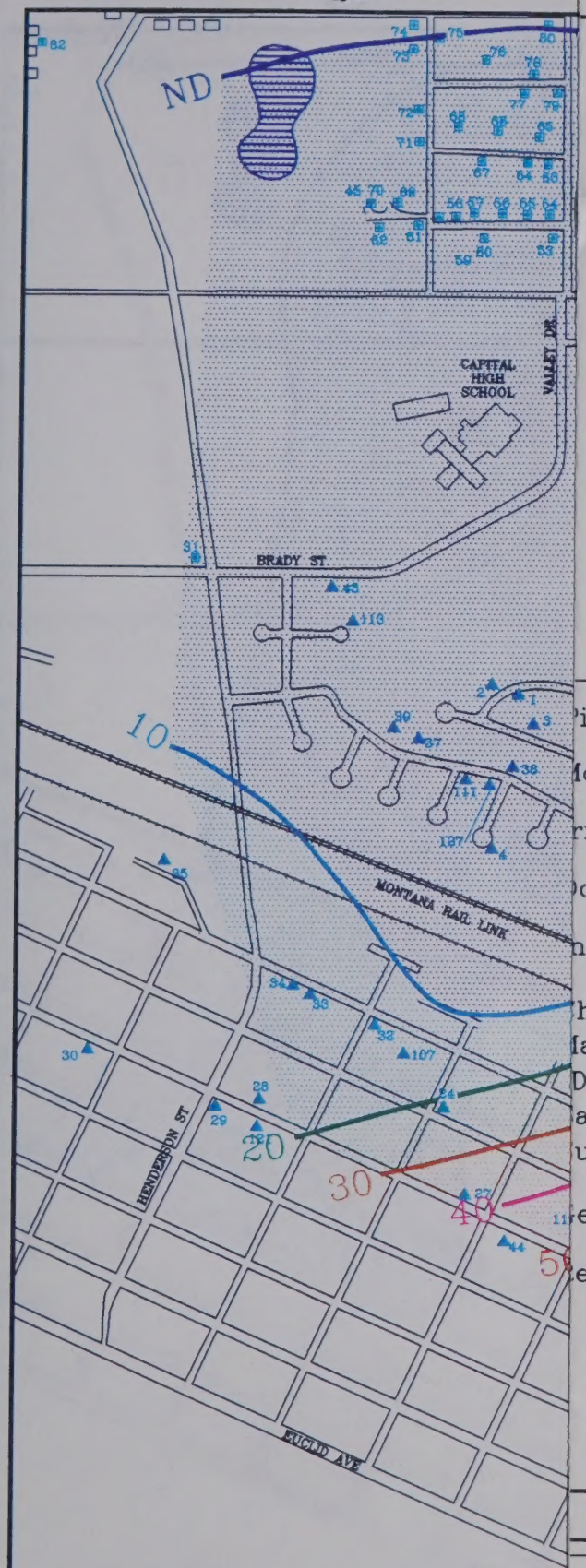
nd Not detected

- Not analyzed

Figure 2-1 presents an isoconcentration map of chloroform within the area of the sampled wells. Review of this data clearly indicate that chloroform concentrations in groundwater are widespread and appear to originate from an area southwest of Carroll College. The groundwater in this area is hydraulically up-gradient and/or cross-gradient to the landfill. Chloroform discovered throughout the study area does not appear to originate from the landfill.

Tetrachloroethene was detected in 21 of the 27 wells and was present in all but one well where dichlorodifluoromethane was detected, monitoring well HL-90-2 which is immediately adjacent and down-gradient to the landfill area. Tetrachloroethene is also known as perchloroethylene (PCE). Figure 2-2 is an isoconcentration map showing the areal distribution of tetrachloroethene in groundwater near the Helena Landfill. Review of the sampling data from Table 2-1 and the isoconcentration map demonstrate that tetrachloroethene is the predominant chemical impacting groundwater in the area. Therefore, the magnitude and extent of the tetrachloroethene plume will be used throughout this assessment to represent groundwater quality near the site. This plume includes all areas where any VOCs attributable to Helena Landfill have been detected. Although the PCE plume presented in Figure 2-2 covers a large areal extent (365 acres), concentrations of tetrachloroethene are relatively low and only slightly above the federal Maximum Contaminant Level (MCL) of 5 μg/L. The total volume of tetrachloroethene dissolved in a 365 acre 50-foot deep plume at concentrations represented by Figure 2-2 is approximately 7 gallons.

Tetrachloroethene is a dense non-aqueous phase liquid (DNAPL) and would sink to the bottom of an aquifer is present as a free-phase liquid. Several wells were completed in the lower reaches of the aquifer and none indicated that tetrachloroethene exists as a free-phase liquid in this area. Tetrachloroethene has a solubility of 1,100 mg/L at 20 °C and would likely be detected at concentrations significantly higher than those observed if present as a phase separated liquid. This observation indicates that tetrachloroethene is likely entering the groundwater as an aqueous solution present in landfill leachate. This



NORTH

Scale
In Feet
400 0 400 800

Legend

- Piezometer
- Monitoring Well
- Irrigation Well
- Domestic Well
- Infiltration Gallery
- Chloroform Isoconcentration Contour Line, Maximum 1994 Detections in µg/L (Dashed where Inferred from Historic Sampling and Groundwater Potentiometric Surface)
- General Direction of Groundwater Flow
- Relative Compliance Boundary

Hydrometrics, Inc.

Figure 2-1
Areal Distribution of Chloroform in Groundwater
City of Helena Landfill
Helena, Montana

Proj. No: CHHL03 Drawn By: 0083
Dwg. No: 52895011 Last Update: 1/30/95



NORTH

Scale
In Feet
400 0 400 800

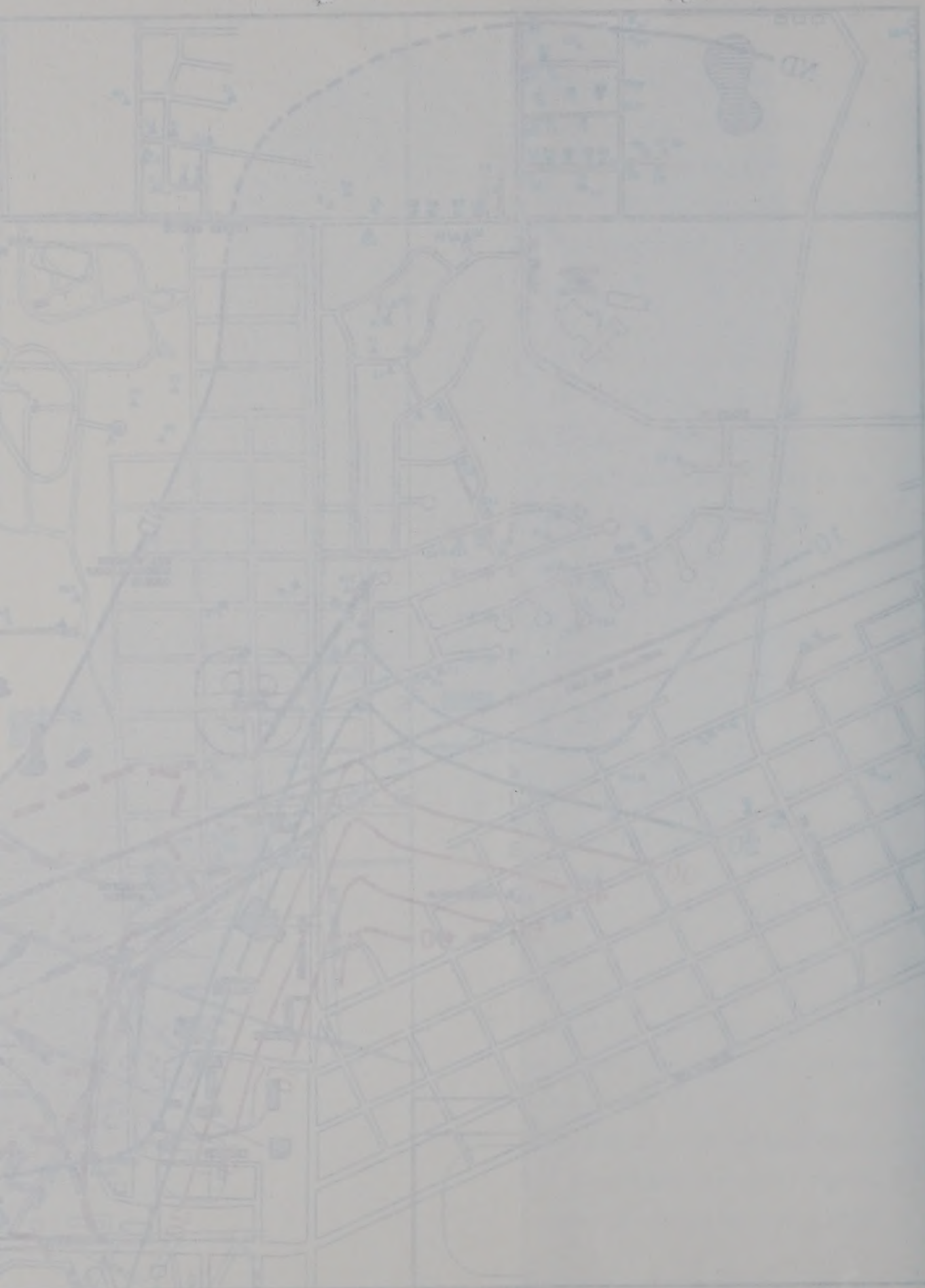
Legend

- HL-1 ■ Piezometer
- 83-6 ● Monitoring Well
- 1-6 ▲ Irrigation Well
- 80 ▣ Domestic Well
- Infiltration Gallery
- —20 Chloroform Isoconcentration Contour Line, Maximum 1994 Detections in μg/L (Dashed where Inferred from Historic Sampling and Groundwater Potentiometric Surface)
- General Direction of Groundwater Flow
- Relative Compliance Boundary

Hydrometrics, Inc.

Figure 2-1
Areal Distribution of Chloroform in Groundwater
City of Helena Landfill
Helena, Montana

Proj. No: CHHL03
Dwg. No: 52895011
Drawn By: 0083
Last Update: 1/30/95







Scale
In Feet
400 0 400 800

Legend

ezometer

nitoring Well

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E Isoconcentration Contour Line,
ximum 1994 Detections in μg/L
ashed where Inferred from Historic
mpling and Groundwater Potentiometric
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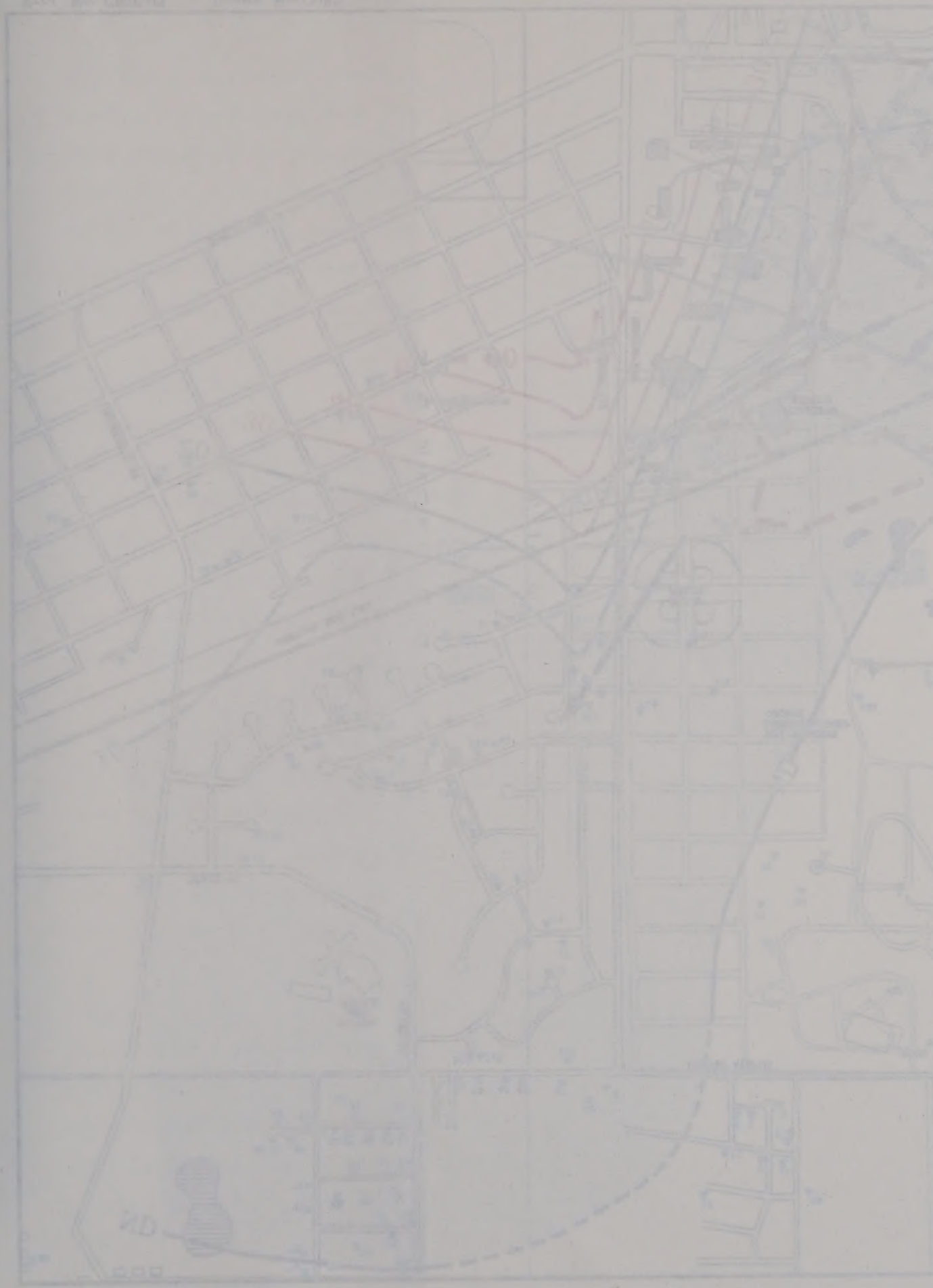
neral Direction of Groundwater Flow

lative Compliance Boundary

Hydrometrics, Inc.

Figure 2-2
Areal Distribution of
hloroethene (PCE) in Groundwater
City of Helena Landfill
Helena, Montana

Proj. No: CHHL03 Drawn By: 0072
Dwg. No: 52895009 Last Update: 2/3/95 0083
Ref. Dwg:





NORTH

Scale
In Feet
400 0 400 800

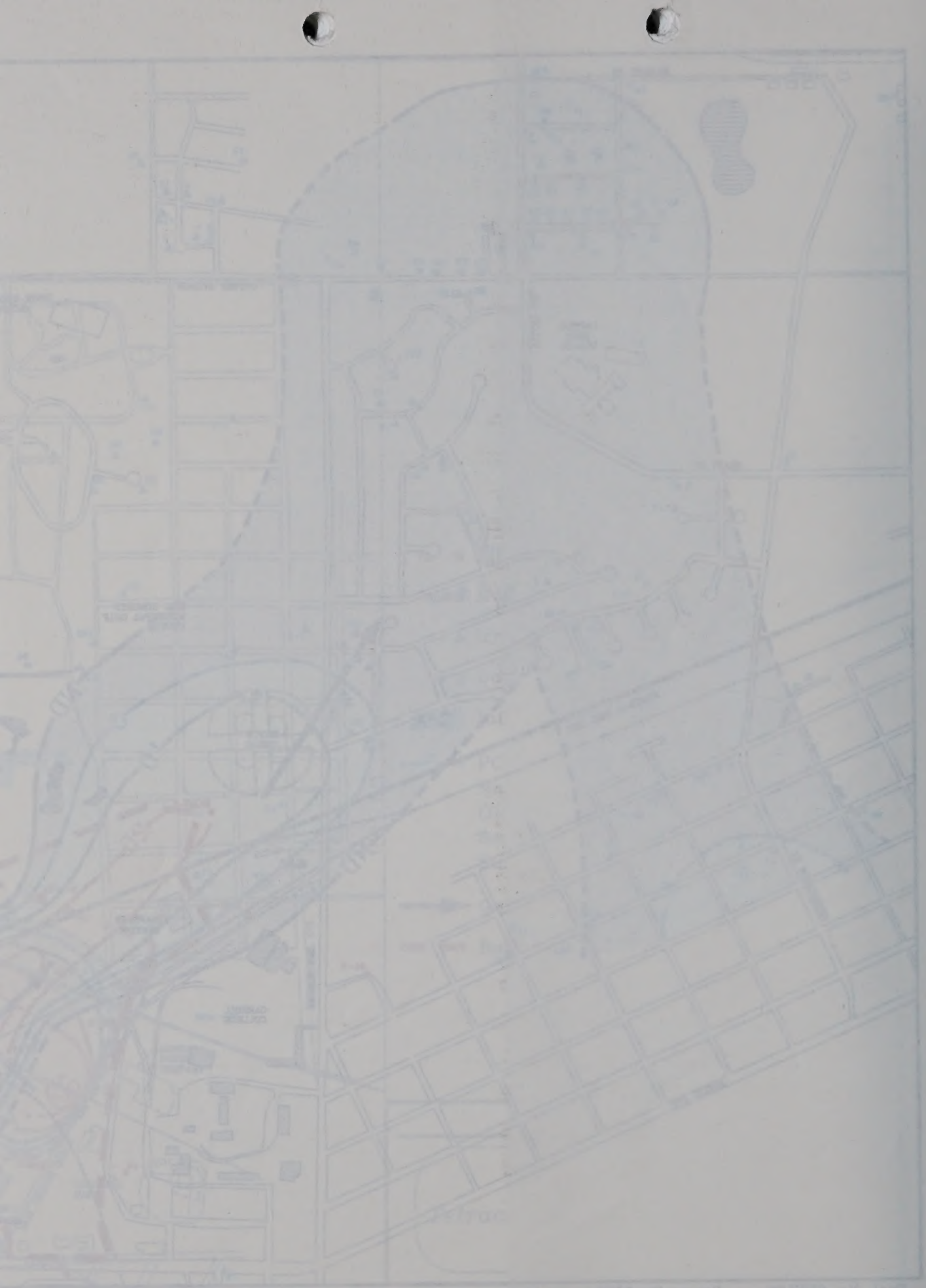
Legend

- HL-1 ■ Piezometer
- 83-6 ● Monitoring Well
- I-6 ▲ Irrigation Well
- 80 ▣ Domestic Well
- Infiltration Gallery
- —5— PCE Isoconcentration Contour Line, Maximum 1994 Detections in μg/L (Dashed where Inferred from Historic Sampling and Groundwater Potentiometric Surface)
- General Direction of Groundwater Flow
- Relative Compliance Boundary

Hydrometrics, Inc.

Figure 2-2
Areal Distribution of Tetrachloroethene (PCE) in Groundwater
City of Helena Landfill
Helena, Montana

Proj. No: CHHL03
Dwg. No: 52895009
Ref. Dwg:
Drawn By: 0072
Last Update: 2/3/95 0083



leachate may be caused by either condensation of landfill gases or water infiltrating through tetrachloroethene sources in the buried waste. Tetrachloroethene dissolved in groundwater is sufficiently diluted that a dissolved plume does not demonstrate the rapid sinking characteristics of free-phase tetrachloroethene.

Review of samples collected during 1994 and the direction of groundwater flow indicate another apparent source of tetrachloroethene. Tetrachloroethene was detected at 5.2 µg/L in irrigation well 28. Past sampling of irrigation well 34 also detected tetrachloroethene at 2.2 µg/L. Both these wells are cross-gradient from the landfill and are not attributable to VOC sources within the landfill. Despite originating from different source areas, impacted groundwater from both plumes converges in the area beneath the Sunhaven Subdivision. Removal of tetrachloroethene flowing from the landfill will reduce but not eliminate tetrachloroethene concentrations in this area. Consideration of existing groundwater quality should be addressed during the selection of a preferred remedy. Tetrachloroethene has been widely used in dry cleaning processes and is a common groundwater contaminant. Groundwater containing tetrachloroethene in this area may be attributable to past commercial activities in the southwest section of Helena.

All solid waste landfills generate landfill gases as organic materials are degraded biologically. The major constituents of biological landfill gas are methane, carbon dioxide, and nitrogen. Methane concentrations at the Helena Landfill are presently being monitored as a precaution for public safety. Methane is a combustible gas at specific concentrations in the presence of oxygen. Migration of methane outside of the landfill limits is a possibility due to the low gas permeability of waste materials. In addition to gases originating from degradation, VOCs present as buried waste volatilize into gases within the open spaces of the landfill. Like methane, these gases may migrate considerable distances from the buried waste. Condensation and precipitation may cause these gases to dissolve in soil moisture which eventually reaches the groundwater table. It is possible that landfill gases generated within the landfill are migrating off-site and

contaminating groundwater. Removal of VOC gases within the landfill alters the partitioning equilibrium and would limit the off-site transport of VOCs.

2.2 GROUNDWATER PROTECTION STANDARDS

The remedy selected through this corrective measures assessment must attain groundwater protection standards as established pursuant to ARM 16.14.708 (5). The groundwater protection standard for each Table 1 or Table 2 (ARM 16.14.706) constituent identified as potentially attributable to the City of Helena Landfill or migrating through the landfill is established as one of the following according to the flow chart presented in Figure 2-3:

- the maximum contaminant level (MCL) for that constituent;
- the background concentration for the constituent;
- established health-based standard for the constituent (Circular WQB-7); or
- concentration established by risk analysis performed in accordance with ARM 16.14.708 (5) (d).

Only one constituent, methylene chloride, did not have established health standards and required a risk analysis in accordance with ARM 16.14708 (5) (d). The groundwater protection standard for methylene chloride was determined by the following method:

$$C_m = [R \times W \times LT]/[CSF \times I \times A \times ED]$$

where:

C_m = Concentration in water (mg/L)

R = Assumed risk level (1×10^{-6})

W = Body weight (70 kg for an adult)

LT = Lifetime (70 years)

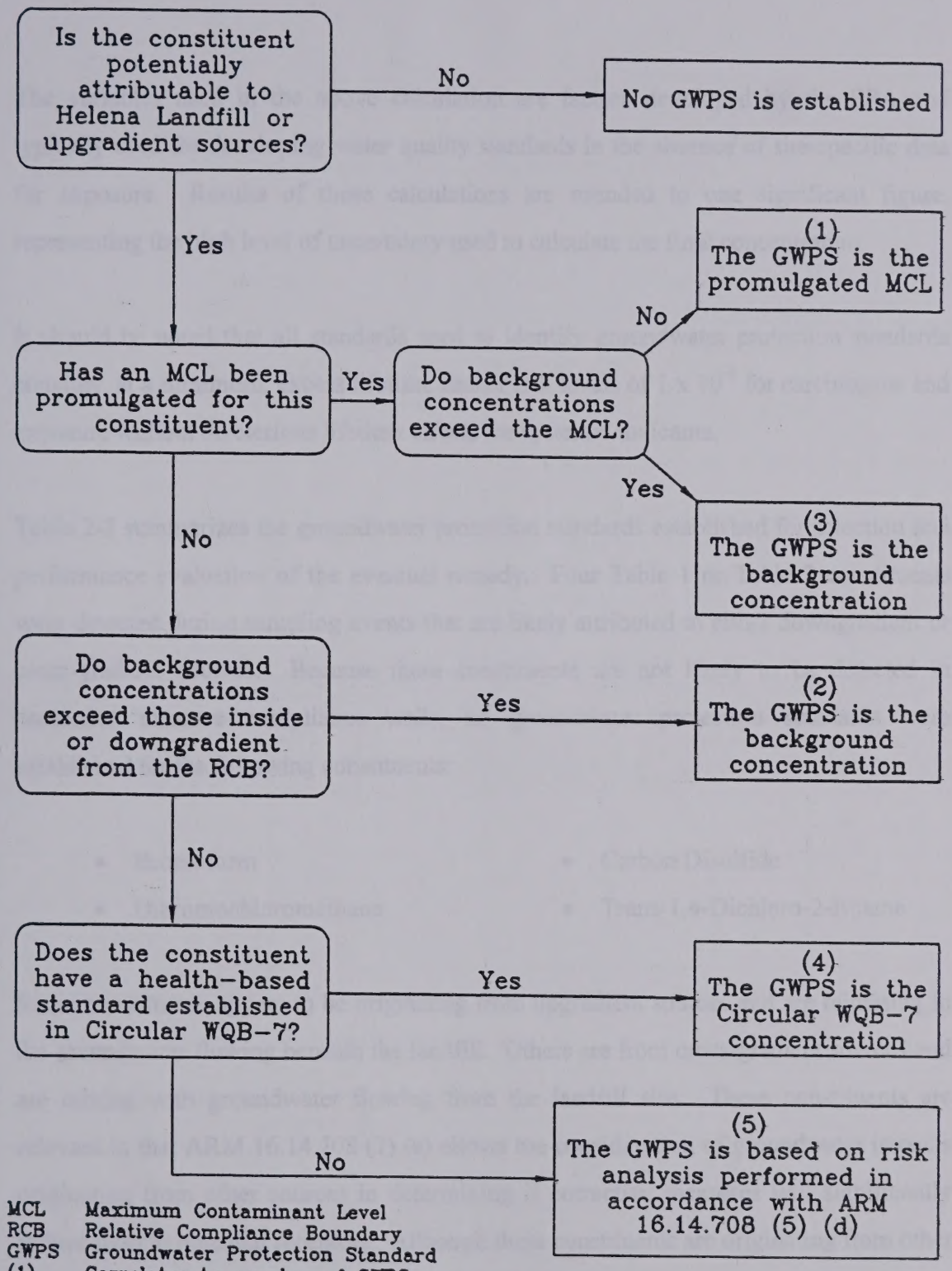
CSF = Carcinogenic slope factor (7.5×10^{-3}/(mg/kg/day))

(Obtained from EPA, 1991)

I = Intake rate (2 liters/day)

A = Adsorption factor (1, i.e., 100% adsorption)

ED = Exposure duration (70 years)



MCL Maximum Contaminant Level
RCB Relative Compliance Boundary
GWPS Groundwater Protection Standard
(1) Correlates to number of GWPS basis in Table 2-2

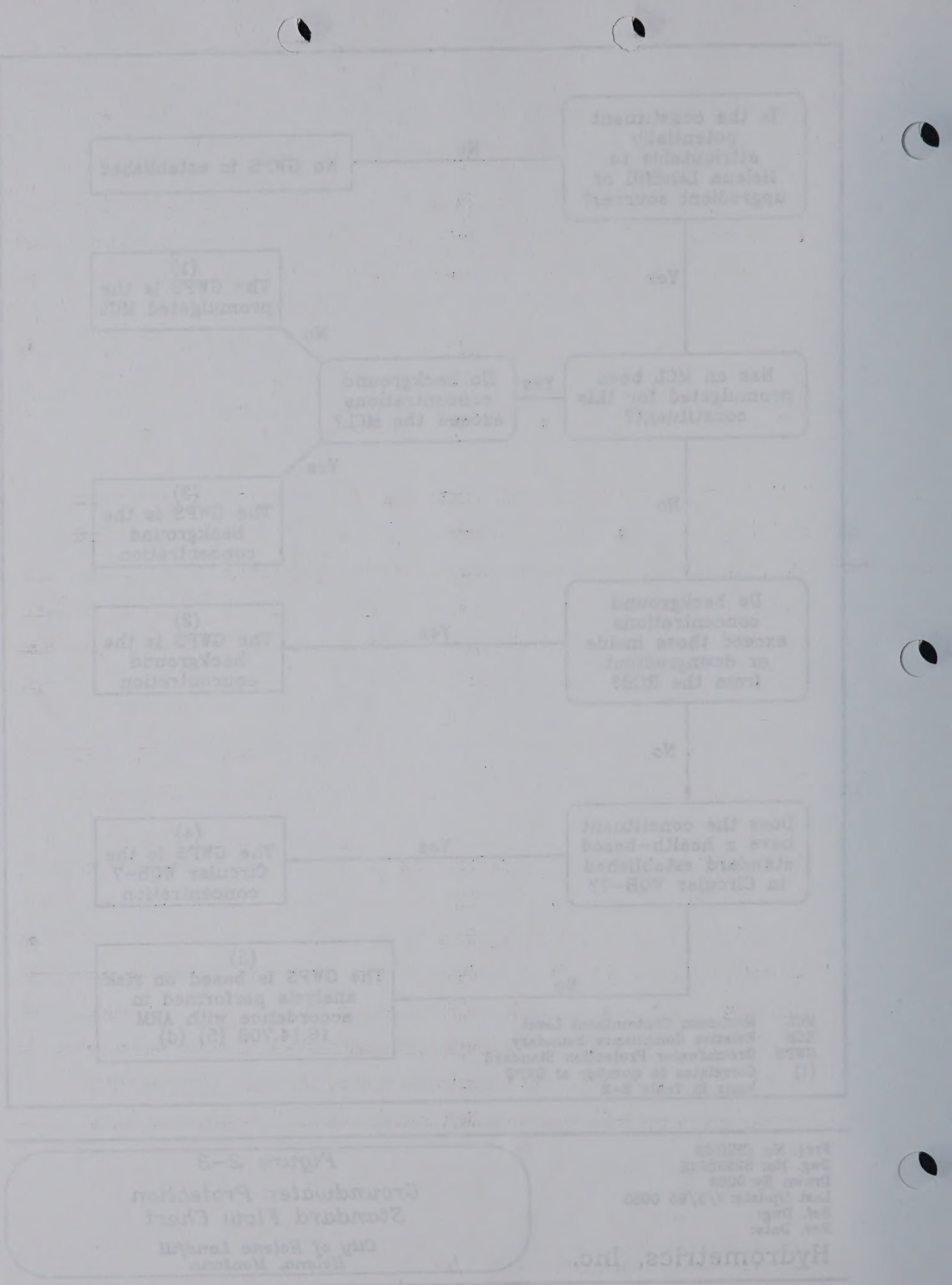
Proj. No: CHHL03
Dwg. No: 52895012
Drawn By: 0089
Last Update: 2/3/95 0083
Ref. Dwg:
Rev. Date:

Hydrometrics, Inc.

Figure 2-3

Groundwater Protection Standard Flow Chart

City of Helena Landfill
Helena, Montana



The variables used in the above calculation are factors developed by the EPA and typically used for developing water quality standards in the absence of site-specific data for exposure. Results of these calculations are rounded to one significant figure, representing the high level of uncertainty used to calculate the final concentration.

It should be noted that all standards used to identify groundwater protection standards consider, at a minimum, excess lifetime cancer risk levels of 1×10^{-4} for carcinogens and exposure without deleterious lifetime effects for systemic toxicants.

Table 2-2 summarizes the groundwater protection standards established for selection and performance evaluation of the eventual remedy. Four Table 1 or Table 2 constituents were detected during sampling events that are likely attributed to either downgradient or cross-gradient sources. Because these constituents are not likely to be detected in corrective measure compliance wells, no groundwater protection standards were established for the following constituents:

- Bromoform
- Dibromochloromethane
- Carbon Disulfide
- Trans-1,4-Dichloro-2-Butene

Some constituents appear to be originating from upgradient sources and are migrating in the groundwater flowing beneath the landfill. Others are from cross-gradient sources and are mixing with groundwater flowing from the landfill site. These constituents are relevant in that ARM 16.14.708 (7) (e) allows the consideration of groundwater impacts originating from other sources in determining if corrective measures will significantly reduce risks to potential receptors. Although these constituents are originating from other sources, detectable concentrations will continue to be observed in many of the corrective measure compliance wells or downgradient irrigation wells. Therefore, groundwater

TABLE 2-2
Development of Groundwater Protection Standards

Parameter	Max. Detect. Upgradient (mg/L)	Max. Detect. Inside RCB (mg/L)	Max. Detect. Downgradient (mg/L)	Potentially Attributed to Helena Landfill?	Develop GW Protection Standard?	Contaminant of Concern?	GW Protection Standard (mg/L)	GW Protection Standard Basis
Arsenic	0.0070	nd	nd	no	✓*	no	0.05	(1)
Barium	nd	0.1000	0.1000	✓	✓	no	2.0	(1)
Iron	0.0900	0.0300	nd	✓	✓	no	300	(4)
Selenium	0.0270	nd	nd	no	✓*	no	0.05	(1)
Zinc	0.0300	0.1500	0.0700	✓	✓	no	5.0	(4)
1,1,1-Trichloroethane	nd	0.0041	0.0017	✓	✓	no	0.2	(1)
1,1-Dichloroethane	nd	**0.0073**	0.0010	✓	✓	no	0.007	(1)
1,2-Dichloropropane	nd	0.0028	nd	✓	✓	no	0.005	(1)
Bromodichloromethane	**0.0170**	nd	0.0015	no	✓*	no	0.017	(2)
Bromoform	0.0150	nd	nd	no	-	-	-	-
Carbon Disulfide	nd	nd	0.0021	no	-	-	-	-
Chloroform	**0.0620**	0.0061	0.0430	no	✓*	no	0.062	(2)
Cis-1,2-Dichloroethene	nd	0.0018	0.0024	✓	✓	no	0.07	(1)
Dibromochloromethane	0.0290	nd	nd	no	-	-	-	-
Dichlorodifluoromethane	nd	0.0044	0.0030	✓	✓	no	6.9	(4)
Methylene Chloride	nd	0.0021	0.0012	✓	✓	no	0.005	(5)
Tetrachloroethene	**0.0052**	**0.0410**	**0.0051**	✓	✓	✓	0.005	(1)
Toluene	nd	nd	0.0062	✓	✓	no	1.0	(1)
Trichloroethene	nd	0.0031	nd	✓	✓	no	0.005	(1)
Trichlorofluoromethane	nd	0.0030	0.0015	✓	✓	no	10.0	(4)
Trans-1,4-Dichloro-2-Butene	nd	nd	0.0020	no	-	-	-	-
Bis (2-ethyhexyl) Phthalate	**0.0100**	nd	nd	no	✓*	no	0.01	(3)
Cyanide (total)	nd	0.0400	0.0047	✓	✓	no	0.2	(4)
Sulfide	0.0400	0.0400	nd	✓	no**	-	-	-

Concentrations in **bold** equal or exceed the Groundwater Protection Standard

(1) Maximum Contaminant Level (MCL) as adopted by the State of Montana
(2) Based on highest value measured in background wells
(3) Background concentration exceeds MCL or health-based standard
(4) Health-based standard (from Circular WQB-7)
(5) Based on risk analysis performed in accordance with ARM 16.14.708 (5) (d)

RCB Relative Compliance Boundary
nd Not Detected
- Parameter has been eliminated - no Groundwater Protection Standard is established
✓* Groundwater Protection Standard necessary despite upgradient source
no** No existing guidance or standards for protection of human health
Shading indicates a Contaminant of Concern

protection standards have been established for the following constituents to verify that detected concentrations remain attributable to up-gradient sources:

- Arsenic
- Chloroform
- Selenium
- Bromodichloromethane
- Bis (2-ethyhexl) Phthalate

Sulfide was detected at MPC-1, but at concentrations considerably lower than the practical quantitation limit listed in ARM 16.19.706. No guidance or standards have been established for protection of human health for sulfide, and therefore, no groundwater protection standards has been established:

The remaining constituents were detected during sampling and are potentially attributable to the landfill. Therefore, groundwater protection standards were established for the following (Table 2-2):

- Barium
- Dichlorodifluoromethane
- Cis-1,2-Dichloroethene
- Iron
- Toluene
- Trichloroethene
- Zinc
- Cyanide
- 1,1-Dichloroethane
- 1,2-Dichloropropane
- Methylene Chloride
- 1,1,1-Trichloroethane
- Trichlorofluoromethane

2.3 CONTAMINANTS OF CONCERN

Previous sections have detailed the detection of several organic and inorganic constituents in monitoring wells in and near the Helena Landfill. In order for a chemical constituent to be considered a Contaminant of Concern for corrective measures consideration, it must meet the following criteria:

- the constituent must be detected in downgradient wells at a statistically significant concentration over levels found in upgradient wells, and

- the constituent must be present at the relative point of compliance at a concentration above the Ground Water Protection Standard (GWPS) as defined in ARM 16.14.708 (5).

In summary, a detected constituent is only a Contaminant of Concern when it is attributable to the landfill and detected at or outside the relative compliance boundary at concentrations exceeding the groundwater protection standard. Table 2-2 presents an initial screening of detected constituents for classification as Contaminants of Concern based on the criteria listed above.

Tetrachloroethene is the only Contaminant of Concern for the Helena Landfill CMA. The corrective measures evaluated in this CMA will be specifically designed to address tetrachloroethene.

2.4 CONTAMINANT FATE AND TRANSPORT

This section identifies the physical and chemical properties of tetrachloroethene, and evaluates the mechanisms controlling its environmental fate and transport. The information presented is largely summarized from the Health Effects Assessment Document for Tetrachloroethene (EPA, 1985).

Tetrachloroethene is a colorless, heavy liquid. It has a chloroform-like odor which can be smelled at concentrations in water greater than 300 ug/l. Principle commercial uses include dry cleaning solvent, dried vegetable fumigant, rug and upholstery cleaner, lipstick remover, paint remover, and metal degreaser.

Tetrachloroethene has physical properties which make it:

- **Relatively insoluble in water**, with a solubility of 150 mg/L;
- **Lipophilic**, with a octanol/water partition coefficient of 399 to 871;
- **More dense than water**, with a specific gravity of 1.624 at 20°C;
- **Volatile in air**, with a vapor pressure of 19 torr at 25 °C;
- **Relatively stable**, with limited photochemical and aqueous decomposition.

These properties provide for a general understanding of potential fate and transport of tetrachloroethene in the environment.

Groundwater Transport. Once released into groundwater, tetrachloroethene would be expected to only partially dissolve into water. A much larger portion of the chemicals would adsorb to soils, provided the soils contained significant amounts of organic material. As a result of soil adsorption, the rate at which tetrachloroethene is transported in groundwater would be retarded from the total groundwater flow rate.

In a pure water system, the density of tetrachloroethene would cause the chemical to sink below the water. However, this behavior can be influenced by the presence of other organics on the surface of the water, or the presence of organic rich soils. Because tetrachloroethene is lipophilic (dissolves into organics more readily than water), it will concentrate in other organic rich media.

Degradation in Water. While relatively stable in water, tetrachloroethene will degrade. The rate of tetrachloroethene degradation is greater when exposed to daylight. Degradation products likely include trichloroacetic acid, hydrochloric acid, and various smaller chlorinated organics (trichlorothylene, dichloroethylene, chloroethene, and methylene chloride).

Volatilization. Once exposed to surface water, tetrachloroethene would be expected to volatilize into the air rapidly (half-life of less than 1 to 20 days). However, much longer half-lives of nearly one year have been observed in some natural environments. These longer than expected half-lives may be due to the presence of organics in the water, which would act to absorb tetrachloroethene and reduce volatilization.

Bioconcentration/Bioaccumulation. Upon exposure to biota, the lipophilic behavior of tetrachloroethene indicates it would be readily adsorbed. However, upon absorption tetrachloroethene is rapidly excreted and therefore does not exhibit large bioconcentration or bioaccumulation potential.

2.5 RISK TO HUMAN HEALTH AND THE ENVIRONMENT

For a toxic effect to occur, exposure to the chemical must occur, and the chemical must have toxic properties. This section identifies possible routes by which humans or biota may be exposed to tetrachloroethene, and evaluates risk based on the chemical's toxicity. As for the previous section, the information presented is largely summarized from the Health Effects Assessment Document for Tetrachloroethene (EPA, 1985). Regulatory standards were obtained from IRIS (EPA, 1994).

2.5.1 Existing and Future Potential Routes of Exposure

There are no mechanisms of exposure to tetrachloroethene in groundwater, and the groundwater does not surface on its own (in the form of seeps or surface ponds) in areas nearby the landfill. Therefore, exposure is limited to cases where groundwater containing tetrachloroethene is pumped via wells to the surface. Zoning restrictions for the city of Helena limit the use of groundwater northwest of the landfill (where tetrachloroethene may potentially exist at a concentration above the MCL) to watering and irrigation use only.

Under existing water use conditions, the following routes of exposure to humans and biota in this area, could possibly occur:

- absorption of the chemical upon direct contact with skin;
- inhalation of the chemical upon volatilization in air;
- incidental ingestion of aspirated water droplets or water droplets on hands, etc.; and
- ingestion of the chemical which may absorb into home grown produce.

The nature of these types of exposures are such that exposures would occur intermittently, and the duration of exposure by an individual to the chemical would be limited. These short-term and intermittent exposures act to reduce the potential for risks.

In the event that zoning restrictions on groundwater use change to allow drinking water use, future potential exposure to humans could also include drinking water and showering (a combination of inhalation and dermal contact). These future potential exposure routes, particularly drinking water exposures, would result in much greater exposures than occur presently.

2.5.2 Chemical Toxicity and Relevant Water Quality Standards

Exposure to high concentrations of tetrachloroethene is known to cause a variety of toxicological effects in humans, including effects on the central nervous system, liver and kidney. Central nervous system effects have been observed in controlled human studies with short term exposures exceeding 100 ppm (678 mg/m^3). These levels are much greater than could be derived from groundwater downgradient of the Helena Landfill. Human evidence of adverse effects to the liver and kidneys are based on accidental occupational exposures at concentrations much greater than 100 ppm. Studies based on experimental animals suggest that reversible changes to liver and kidneys may occur in humans at inhalation concentrations of 200 ppm. No studies were identified in this literature review of tetrachloroethylene exposure to humans via ingestion in food or water.

EPA Drinking Water Health Advisories. The EPA Office of Drinking Water has established Drinking Water Health Advisories for toxic chemicals as technical guidance for the protection of public health. Based on a study in which mice were exposed to tetrachloroethene via gavage (introducing the material into the stomach using a tube), long-term health advisories for protection against non-carcinogenic effects have been determined at:

- 1.4 mg/l for children; and
- 5 mg/l for adults

The advisories are calculated from the no observed adverse effect level (NOAEL) obtained from the experiment, default drinking water consumption rates (1 liter per day for children and 2 liters per day for adults), and an uncertainty factor of 100 (to account for interspecies and intrahuman variability with the use of a NOAEL derived from an animal study). Since these values are based on non-carcinogenic endpoints, the use of these values are prefaced by a pending final determination by the EPA on the carcinogenic potential of tetrachloroethene.

EPA Maximum Contaminant Levels. Additionally, the EPA has established Maximum Contaminant Levels (MCLs) under the Safe Drinking Water Act. MCLs are enforceable federal standards applied to public drinking water supply systems. They are based on the chemical toxicity and the technological and economic feasibility of achieving the standard. The MCL for tetrachloroethene is 0.005 mg/l. The value is established assuming tetrachloroethene is carcinogenic, with the standard set at the practical quantitation limit (PQL). The PQL is the lowest concentration which can be reliably detected using routine analytical procedures.

Calculated Carcinogenic Risks. The EPA has tentatively classified tetrachloroethene as a probable (group B2) carcinogen, meaning the toxicity factor used to calculate risk is based on sufficient evidence of carcinogenicity in animals with inadequate or lack of

evidence in humans. Of the available studies conducted to date, the EPA oral toxicity factor is based on the study with the most statistically significant increase in cancers. The study identified liver cancers in mice exposed via gavage. Based on this study a toxicity factor of 5.1/(mg/kg/day) was established (EPA, 1991). Applying this toxicity factor and assuming a 70 kg adult is exposed to 2 liters of water per day for a lifetime, the following risks are calculated:

Exposed Concentration	Associated Level of Risk
• 0.07 mg/l	One in 10,000 (or 10^{-4})
• 0.007 mg/l	One in 100,000 (or 10^{-5})
• 0.0007 mg/l	One in 1,000,000 (or 10^{-6})

As for all cancer risk estimates based on EPA established toxicity factors, these risks are estimated upper confidence limits of risk. The actual risks may be lower, and may be as low as zero. This is particularly relevant to the evaluation of tetrachloroethene, since a final determination by the EPA regarding the carcinogenic potential is pending. While a carcinogenic toxicity factor is published in Health Effects Assessment Summary Tables (HEAST - EPA, 1991), no carcinogenic toxicity factor is published in Integrated Risk Information System (IRIS - EPA, 1994) pending a final determination. IRIS is EPA's primary source of information on toxicity factors, while HEAST is a secondary reference. The discrepancy between IRIS and HEAST exists because the EPA has not made a final decision on whether tetrachloroethene should be classified as a probable human carcinogen (group B2) or as a possible human carcinogen (group C). If the EPA decides on a Group C classification, the Health Advisories provided above would serve as the basis for regulatory standards. If EPA decides on a Group B2 classification, the present MCL would likely continue to serve as the principle regulatory water quality standard.

With uncertainties regarding the actual carcinogenic potential of tetrachloroethene in mind, the present MCL for tetrachloroethene of 0.005 mg/L is expected to be protective of approximately a one-in-100,000 risk (or 10^{-5}) of contacting cancer. Estimation of risks

for other exposure pathways other than through drinking water are beyond the intended scope of this evaluation, but are expected to be one or more orders of magnitude less than for drinking water.

Risks to Environmental Receptors

Environmental receptors in the Helena area might include rodents, pets, and birds. These receptors could potentially be exposed to pooled surface water derived from irrigation water uses. These exposures would likely occur intermittently in a dry climate such as Helena's, where water seeps into the ground rapidly. In addition, the tetrachloroethene in the irrigation water would be expected to volatilize out of the irrigation water very rapidly.

A review of experimental results provided in the Health Assessment Document for Tetrachloroethene (EPA, 1985) indicates that 50 percent of exposed mice could die upon ingestion of approximately 8,000 mg of tetrachloroethene per kg body weight. For dogs, cats and rabbits, no deaths were observed with exposures of 4,000 to 5,000 mg of tetrachloroethene (depending on the species) per kilogram body weight. An Eastern Cottontail rabbit weighs approximately 1 kilogram, and could therefore consume 5,000 mg of tetrachloroethene (the experimental result for a rabbit) without receiving a lethal dose. At the maximum concentration observed in any well during 1994 of 0.04 mg/l, a receptor (such as a rabbit) would need to consume 125,000 liters of water during a short-term exposure period to ingest 5,000 mg of tetrachloethene.

This amount of ingestion is entirely impossible, indicating minimal to no risk to mammalian environmental receptors. No experimental results specific to birds was found in our literature search.

3.0 CORRECTIVE ACTION OBJECTIVES

This section begins the process of developing and evaluating corrective measure alternatives for remediation of groundwater at the City of Helena Landfill by establishing the objectives which the selected remedy will be expected to achieve. These objectives are specified in ARM 16.14.708 (7) (b) and include the following:

- Protection of Human Health and the Environment
- Attainment of Groundwater Protection Standards
- Control of Source Area
- Compliance with Waste Management Practices
- Approval by MDHES

The following sections detail each of the four objectives and the subsequent screening methodology used in this CMA.

3.1 PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

This objective requires the selected remedy to be protective of human health and the environment. A remedy is protective if it adequately eliminates, reduces, or controls all current and potential risks to each human or environmental receptor previously identified in Section 2.5, Risk to Human Health and the Environment. A remedy's protectiveness is a qualitative assessment of the degree to which the remedy meets this objective.

3.2 ATTAINMENT OF GROUNDWATER PROTECTION STANDARDS

This objective requires the selected remedy to attain the groundwater protection standards for Table 2 (ARM 16.14.706) chemicals at the relative compliance boundary. These standards were developed in Section 2.2 and are listed on Table 2-2.

3.3 CONTROL OF SOURCE AREA

This objective requires the selected remedy to control the source(s) of release so as to reduce or eliminate further releases of Contaminants of Concern to the environment. This objective may be met by technologies which isolate the waste itself, limit the forming of leachate, or limit the formation and transport of landfill gas.

3.4 COMPLIANCE WITH WASTE MANAGEMENT PRACTICES

This objective requires the selected remedy to comply with waste management practices specified in ARM 16.14.708 (8). This regulation specifies that the selected remedy must be monitored and evaluated for effectiveness. In addition, interim measures and further remedial action may be necessary if the selected remedy cannot be demonstrated to be effective. This requires technologies which are protective of human health and the environment and comply with applicable federal Resource Conservation and Recovery Act (RCRA) requirements.

3.5 APPROVAL BY MDHES

Approval of a preferred remedy by the MDHES will follow review of the corrective measures evaluated in this assessment. MDHES may also consider public comment prior to approving a proposed remedy.

3.6 SCREENING METHODOLOGY

This assessment uses a three-tiered screening methodology to develop a set of applicable alternatives, evaluate each according to required criteria, and propose a preferred remedy. Specific evaluation criteria are required by ARM 16.14.708 (6) (c) and ARM 16.14.708 (7) (c) and are incorporated into the following three levels of evaluation:

- Initial Screening Criteria
- Alternative Evaluation Criteria
- Modifying Criteria

Initial screening criteria are those criteria that must be met for a particular process options to be retained for further consideration as potential alternatives. The three initial screening criteria are: technical implementability; effectiveness and protectiveness; and relative costs.

Process options receiving favorable evaluations during the initial screening will then be assembled into alternatives representing varying degrees of complexity. Five alternative evaluation criteria will be used to compare and rank these assembled alternatives. Alternative evaluation criteria are: reliability; ease of implementation; potential impacts; time frame; and costs.

Corrective measure alternatives receiving favorable evaluation during the evaluation of alternatives will be compared with regard to two modifying criteria: technical and economic capability of the owner; and degree to which the remedy addresses community concerns. Modification of the evaluation is allowed under ARM 16.14.708 (7) (c) to allow the operator/owner to select a remedy that can reasonably be implemented yet adequately addresses community concerns.

4.0 IDENTIFICATION AND SCREENING OF CORRECTIVE MEASURE TECHNOLOGIES

Many existing remedial technologies could potentially meet the corrective action objectives at the Helena Landfill. Thirty-eight different technologies were qualitatively evaluated during an initial screening process. The technologies which passed this initial screening are then assembled into the six most applicable remedial alternative which will meet the screening criteria, and which meet the project objectives. These six alternative are then evaluated on a more comprehensive basis to identify the preferred remedial alternative (Section 6.0). The initial technology screening process, including the criteria evaluated and the results achieved are described in the following sections.

4.1 INITIAL SCREENING CRITERIA

The initial screening criteria used to compare the thirty-eight potential remedial technologies are as follows:

- *Technical Implementability* - Likelihood that a process option can be implemented as a remedial action with regard to the constraints of site-specific contaminants and conditions (poor, fair good).

- *Effectiveness and Protectiveness* - The ability of the process option to meet the corrective measures objectives and limit adverse impacts to human health and the environment (poor, potential, demonstrated).

- *Relative Costs* - Cost analysis based on engineering judgment as to a process option's costs relative to other process options (low, moderate, high). Cost basis for screening was used as a moderating criteria, and was only used to qualify criteria that were similarly ranked in the other qualifying criteria.

These criteria are consistent with the requirements of ARM 16.14.708, as well as requirements for CERCLA Feasibility Studies (FS). The CERCLA FS process is well established and has found to be effective and defensible in the alternative screening process.

The remedial technologies which were evaluated were categorized into seven "General Response Action" groups. The groups allowed for similar technologies to be not only qualitatively evaluated as to the qualifying criteria, but to be compared to each other and retained or eliminated based on which of the similar technologies is likely to be most effective in meeting the project objectives.

Table 4-1 describes each of the technologies which were evaluated during the initial screening process, and the qualitative ranking for each technology. The table also denotes which of the alternatives were eliminated from further evaluation and the reason that the alternative has been eliminated.

4.2 RESULTS OF THE INITIAL SCREENING PROCESS

A "no action" alternative is typically included in the screening process for comparison with other alternatives, and to provide a cost/benefit comparison. Because several corrective actions have already been implemented at the site, a no action alternative is not appropriate for this CMA. The "Existing Corrective Measures" response has been retained because existing remedial actions will likely have a positive effect on the quality of ground water at the site. In addition, institutional controls already in place effectively limit exposure to contaminants.

The "Limited Action" response, which would provide for more institutional controls and/or water right restrictions was retained because it is consistent with the corrective measures already implemented at the site, and several such controls are already in place.

TABLE 4-1
CORRECTIVE MEASURE TECHNOLOGIES SCREENING

General Response Action	Remedial Technology	Process Option	Description	Technical Implement-ability	Effectiveness and Protectiveness	Relative Cost	Reason for Elimination	Screening Comments
Existing Corrective Measures and No Further Action	Closure Capping Institutional Controls Storm Drain Extension	Monitoring to Evaluate Effectiveness	Continued sampling and analysis	Good	Potential	Low	Retained	No action alternative not appropriate because screened corrective measures have been implemented to date
Limited Action	Institutional Controls	Alternate water supply	Provide new well or extend municipal water supply	Good	Potential	Low	Retained	Limits exposure to groundwater; may be supplied by potential annexation
		Water right restrictions	Restrict use of groundwater with deed and water right restrictions	Good	Potential	Low	Retained	Limits exposure to groundwater
Containment	Capping	Clay	Limit infiltration and leaching by placing clay cap over uncapped sections of landfill	Good	Potential	High	Does not address VOC migration as gas, other containment technology retained	Impact of infiltration through uncapped sections has not been determined
	Vertical Subsurface Barriers	Slurry walls	Block horizontal groundwater flow with soil/bentonite slurry wall	Fair	Demonstrated	High	Does not address VOC migration as gas, other containment technology retained	Potentially applicable in concert with hydraulic controls; excessive depths; extremely high costs
		Sheet piling	Block horizontal groundwater flow with interlocked sheet piling	Fair	Potential	High	Does not address VOC migration as gas, other containment technology retained	Limited additional benefit over hydraulic controls; significantly higher costs
		Grout curtain	Inject grout to create a groundwater flow barrier	Fair	Potential	High	Does not address VOC migration as gas, other containment technology retained	Limited additional benefit over hydraulic controls; significantly higher costs
	Hydraulic Controls	Drilled wells	Establish a groundwater flow barrier with drilled extraction wells	Good	Demonstrated	Moderate	Retained	Very applicable for this site; may have broad impact on shallow aquifer
		Excavated trenches	Establish a groundwater flow barrier with excavated trenches backfilled with porous media	Poor	Poor	High	More applicable containment technology available, physically prohibitive	Physically prohibitive at anticipated depths to groundwater

TABLE 4-1 (continued)
CORRECTIVE MEASURE TECHNOLOGIES SCREENING

General Response Action	Remedial Technology	Process Option	Description	Technical Implement-ability	Effectiveness and Protectiveness	Relative Cost	Reason for Elimination	Screening Comments
Collection	Groundwater Extraction	Extraction wells	Collect contaminated groundwater with drilled extraction wells	Good	Demonstrated	Moderate	Retained	Applicable for hydraulic control of groundwater
		Excavated trenches	Extract contaminated groundwater with excavated trenches backfilled with porous media	Poor	Poor	High	More applicable containment technology available, physically prohibitive	Physically prohibitive at anticipated depths to groundwater
	Landfill Gas Extraction	Landfill gas extraction wells	Remove and/or limit contaminant in groundwater by extracting landfill gases	Good	Potential	Moderate	Retained	Established technology with newly recognized benefits for groundwater remediation
Direct Treatment	Physical/ Chemical	Air stripping	Phase separation of dissolve contaminants by forced air	Good	Demonstrated	Low	Retained	Well suited for VOCs; may require treatment of air emissions
		Steam stripping	Phase separation of dissolve contaminants by heat and forced air	Good	Demonstrated	Moderate	More applicable direct treatment process retained	Operates on air stripping principle with increased transfer efficiency; significantly more costly
		Adsorption	Phase separation of dissolve contaminants by adsorption onto GAC or other media	Good	Demonstrated	High	Retained	Well suited for VOCs; high operation and maintenance costs, low capital costs
		Reductive dehalogenation	Initiate dehalogenation and degradation of dissolved contaminants by filtering through iron filings	Fair	Potential	Low	More applicable direct treatment process retained	Innovative technology under development at the University of Waterloo; requires treatability study
		Ion exchange	Physical separation of dissolve contaminants using selected resins	Poor	Poor	Moderate	More applicable direct treatment process retained	Applicable for ionic contaminants only
		Reverse Osmosis	Physical separation of dissolved contaminants using semi-permeable membranes	Poor	Poor	High	More applicable direct treatment process retained	Not applicable for VOCs

TABLE 4-1 (continued)
CORRECTIVE MEASURE TECHNOLOGIES SCREENING

General Response Action	Remedial Technology	Process Option	Description	Technical Implement-ability	Effectiveness and Protectiveness	Relative Cost	Reason for Elimination	Screening Comments
Direct Treatment (continued)	Physical/ Chemical (continued)	Freeze crystallization	Initiate freezing to cause phase separation of dissolved contaminants	Poor	Poor	High	More applicable direct treatment process retained	Requires very high concentrations
		Evaporation	Evaporate contaminants in surface ponds or by spray irrigation	Good	Demonstrated	Low	Retained	Efficiency is weather dependent; requires ponds for winter storage
		Oxidation	Chemical, photo-oxidation, or other oxidation of dissolved contaminants	Good	Demonstrated	Moderate	More applicable direct treatment process retained	Cost competitive with air stripping when emissions requirements are significant
	Biological	Aerobic	Microbial decomposition	Fair	Potential	Moderate	More applicable direct treatment process retained	Requires treatability study; compounds more halogenated than vinyl chloride require reductive dehalogenation
		Anaerobic	Microbial decomposition	Fair	Potential	Moderate	More applicable direct treatment process retained	Requires treatability study; may require aerobic follow-up for degradation of daughter products
	Thermal Destruction	Rotary kiln	Combustion in a horizontal rotary cylinder	Fair	Potential	High	More applicable direct treatment process retained	High cost; consumptive energy use; requires treatability study
		Fluidized bed	Inject dissolved contaminants into super-heated bed of sand	Fair	Potential	High	More applicable direct treatment process retained	High cost; consumptive energy use; requires treatability study
		Wet air oxidation	High pressure/temperature thermal oxidation	Fair	Potential	High	More applicable direct treatment process retained	High cost; consumptive energy use; requires treatability study
	Off-site	POTW	Pipe to local POTW for treatment	Fair	Demonstrated	Moderate	Retained	Based on POTW's ability to handle quantity and quality of water
		TSDF	Transport to TSDF	Poor	Potential	High	More applicable direct treatment process retained	Estimated extraction rates too high for effective transport

TABLE 4-1 (continued)
CORRECTIVE MEASURE TECHNOLOGIES SCREENING

General Response Action	Remedial Technology	Process Option	Description	Technical Implement-ability	Effectiveness and Protectiveness	Relative Cost	Reason for Elimination	Screening Comments
In-Situ Treatment	Physical/ Chemical	Oxidation	Inject and extract oxidants to oxidize dissolved contaminants in-situ	Fair	Potential	High	More applicable in-situ treatment process retained	May mobilize more toxic daughter products such as vinyl chloride
		Air sparging	Strip dissolved contaminants from groundwater by forced air injection	Fair	Potential	Moderate	Retained	Air compressibility results in preferential flow paths and limiting treatment
	Biological	Aerobic	Microbial decomposition	Fair	Potential	Moderate	More applicable in-situ treatment process retained	Difficult to maintain appropriate microbial conditions in-situ
		Anaerobic	Microbial decomposition	Fair	Potential	Moderate	More applicable in-situ treatment process retained	Difficult to maintain appropriate microbial conditions in-situ
	Thermal	Steam sparging/ vapor extraction	Strip dissolved contaminants from groundwater by forced steam injection and vacuum extraction	Fair	Potential	High	More applicable in-situ treatment process retained	Limited additional benefits over air sparging; excessive energy costs
Discharge (after direct treatment)	Surface	Irrigation	Use treated groundwater for golf course irrigation	Good	Demonstrated	Low	Retained	Requires cold weather water storage or transfer to POTW
	Subsurface	Injection wells	Pump treated groundwater back into shallow aquifer	Good	Demonstrated	Moderate	More applicable discharge alternative retained	High operation requirements; may be used to enhance hydraulic control
		Infiltration gallery	Infiltrate treated groundwater to the shallow aquifer through infiltration galleries or trenches	Good	Demonstrated	Moderate	Retained	Very applicable for this site; nearby storm water infiltration gallery has performed adequately
	Off-site	POTW	Pipe to local POTW for treatment	Good	Demonstrated	Moderate	More applicable discharge alternative retained; treated groundwater need not be added to the POTW flows	Based on POTW's ability to handle quantity and quality of water
		TSDF	Transport to TSDF	Poor	Potential	High	More applicable discharge alternative retained	Estimated extraction rates too high for effective transport

POTW Publicly owned treatment works
TSDF Treatment and Storage Disposal Facility
GAC Granular activated carbon

Several "Containment" technologies were evaluated. All of the physical containment barrier technologies were eliminated because they did not effectively address the landfill gas VOC migration, and the depth to groundwater at much of the site would be technically and economically prohibitive for construction of the barriers. Containment of groundwater using extraction wells to obtain hydraulic control of the plume area was retained for further evaluation because this technology is well proven and established, and because it is more applicable at the site than the other potential containment technologies.

Collection technologies for both groundwater and landfill gas were evaluated. These technologies would need to be combined with treatment and discharge technologies. The collection of groundwater and landfill gas extraction wells is feasible at the site. These technologies were retained for further evaluation.

Several technologies for treating the collected groundwater, including physical, chemical, biological, thermal, and off-site processes, were evaluated during the initial screening process. Air-stripping was retained because it is a well proven, highly effective treatment for VOC's and has operational and economic advantages over most of the other technologies screened. Adsorption by granular activated carbon (GAC) canisters was retained in the event that further analyses of extraction flow rates and VOC concentrations indicate that GAC results in an economic advantage over air stripping. Evaporation/UV destruction of VOC's was also retained as this was considered an innovative technology with substantial economic advantages and would maintain a beneficial use for the water collected. This process would likely require some treatability testing to prove its effectiveness. Treatment at the local publicly owned treatment works (POTW) was retained as an alternative because it may prove to be cost effective, and also may be necessary for use in conjunction with the other direct treatment alternatives.

Physical, chemical, biological, and thermal in-situ remediation technologies were screened. Based on the qualifying criteria, and the proven effectiveness of air-sparging on a wide variety

of volatile compounds, air-sparging was considered the most effective in-situ technology and was retained for further evaluation.

Two processes for discharge of collected water including irrigation and infiltration were retained for further evaluation. Each of these alternatives are technically and economically feasible and may be used in conjunction with one another to provide efficient disposal of collected and treated groundwater.

Table 4-2 is a summary showing all of the technologies which were retained for further evaluation after the initial screening process. These technologies are assembled into six applicable comprehensive remedial alternatives in Section 5.0.

TABLE 4-2
SUMMARY OF RETAINED PROCESS OPTIONS

General Response Action	Remedial Technology	Retained Process Option
Existing Corrective Action	Closure/Capping/ Institutional Controls/ Storm Drain Extension	Monitoring
Limited Action	Institutional Controls	Alternate water supply
Containment	Hydraulic Controls	Drilled wells
Collection	Groundwater Extraction	Extraction wells
	Landfill Gas Extraction	Landfill gas extraction wells
Direct Treatment	Physical/Chemical	Air stripping
		Adsorption (GAC)
		Evaporation
	Thermal Destruction	Landfill gas flare
	Off-site	POTW
In-Situ Treatment	Physical/Chemical	Air sparging
Discharge	Surface	Irrigation
	Subsurface	Infiltration gallery

GAC Granular activated carbon
POTW Publicly owned treatment works

5.0 DEVELOPMENT OF ALTERNATIVES

A particular remedial technology may have several different process options which represent the different manners in which the technology can be implemented and do not usually represent a complete remedy by themselves. A remedy consists of several process options which collectively address the performance objectives. Therefore, process options that were retained during the initial screening (Section 4.0) were assembled into collections of processes which each represent a comprehensive alternative for remediation of groundwater. An effort was made to include process options which include treatment and containment technologies while presenting a range of alternatives which represent varying degrees of complexity and cost. The following six alternatives were assembled during the development of alternatives:

- Existing Corrective Action
- Landfill Gas Extraction/Landfill Gas Flare
- In-Situ Air Sparging
- Extraction/Discharge to POTW for Treatment
- Extraction/Evaporation/Seasonal Discharge to POTW
- Extraction/Direct Treatment/Discharge

All process options retained and listed in Table 4-1 were used in the development of at least one alternative. Table 5-1 lists each of the six alternatives and the specific process options which they use. The following sections briefly describe each alternative and its various components.

5.1 ALTERNATIVE 1 - EXISTING CORRECTIVE ACTION

This corrective measure alternative involves groundwater monitoring, continued institutional controls and existing corrective action recently implemented at the landfill site.

TABLE 5-1
ASSEMBLED ALTERNATIVES

General Response Action	Remedial Technology	Process Option	Alternative 1 Existing Corrective Action	Alternative 2 Landfill Gas Extraction/ Landfill Gas Flare	Alternative 3 In-Situ Air Sparging	Alternative 4 Extraction/ Discharge to POTW for Treatment	Alternative 5 Extraction/ Evaporation/ Seasonal POTW Treatment	Alternative 6 Extraction/ Direct Treatment/ Discharge
No Action	None	Monitoring	●(1)	●(1)	●(1)	●(1)	●(1)	●(1)
Limited Action	Institutional Controls	Alternate water supply	●(1)	●(1)	●(1)	●(1)	●(1)	●(1)
		Water right restrictions	●(1)	●(1)	●(1)	●(1)	●(1)	●(1)
Containment	Hydraulic Controls	Drilled wells				●	●	●
Collection	Groundwater Extraction	Extraction wells				●	●	●
	Landfill Gas Extraction	Landfill gas extraction wells		●				
Direct Treatment	Physical/ Chemical	Air stripping						●(2)
		Adsorption (GAC)						●(2)
		Evaporation					●	
	Thermal Destruction	Landfill gas flare		●				
	Off-site	POTW				●	●	
In-Situ Treatment	Physical/ Chemical	Air sparging			●			
Discharge (after treatment)	Surface	Irrigation					●	●(3)
	Subsurface	Infiltration gallery						●(3)

(1) All alternatives include monitoring and institutional controls
(2) Direct treatment may be either air stripping or GAC based on further analysis
(3) Discharge method may be either irrigation or infiltration gallery based on further analysis

POTW Publicly owned treatment works
GAC Granular activated carbon

5.1.1 Groundwater Monitoring

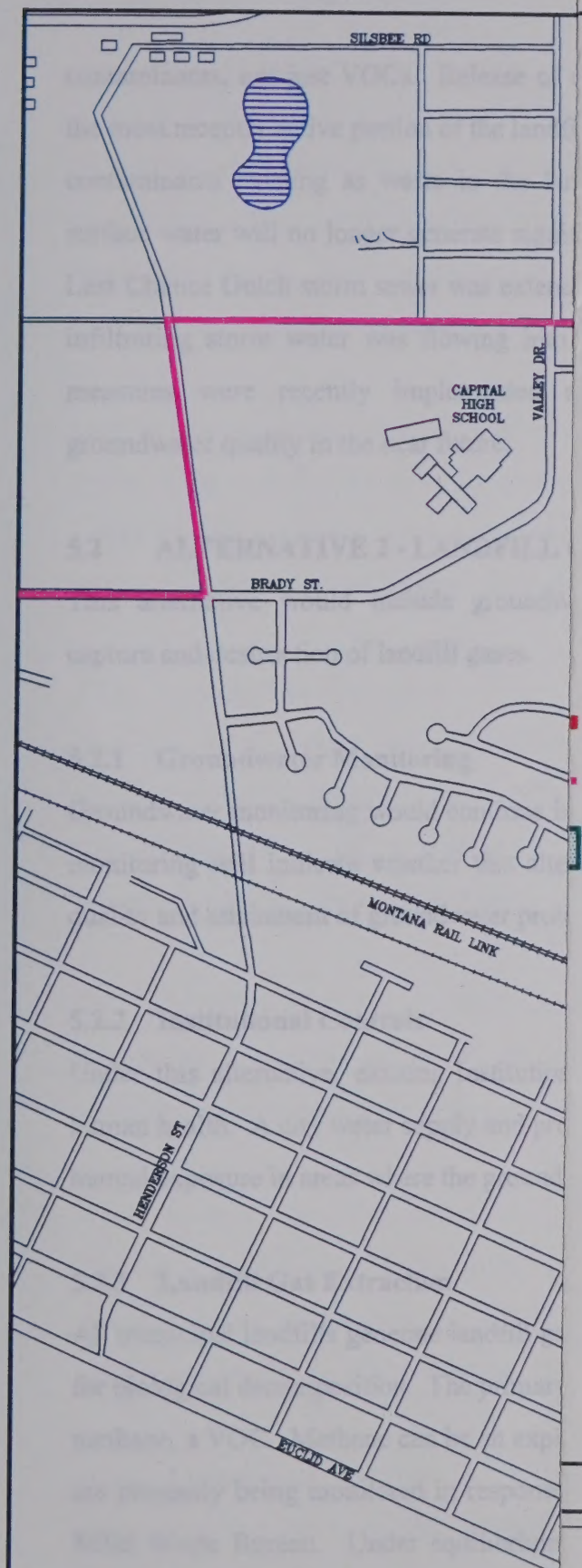
Continued groundwater monitoring is required under ARM 16.14.701 and is included in all six alternatives presented in this assessment. The current groundwater monitoring program includes analyzing samples from 27 monitoring and residential wells for 250 chemical constituents two times every year. This program is detailed in the Helena Landfill Sampling and Analysis Plan (Hydrometrics, 1993). If water quality is degrading, monitoring will provide advance warning that additional corrective measure may be necessary. Likewise, continued monitoring will indicate whether the alternative selected is resulting in improved groundwater quality and attainment of groundwater protection standards.

5.1.2 Institutional Controls

Existing institutional controls are also included in all six developed alternatives. Existing city ordinances require each residence within city limits to connect to the city water supply for potable water use (Title 3, Chapter 2, Section 10). This ordinance greatly reduces the potential for human exposure by providing an alternative potable water source other than the impacted groundwater. Additional wells within the city limits also are prohibited by a ban on well drilling within city limits (Title 3, Chapter 11), thereby restricting access to impacted groundwater. Title 3, Chapter 11, Section 3 requires that there be no cross-connection between any private wells and the City water distribution system. These institutional controls are protective of human health by limiting potential exposure pathways.

5.1.3 Existing Corrective Action

Three significant landfill corrective measures have recently been implemented at the landfill site: landfill closure; clay capping; and storm drain extension. These measures are detailed in the Helena Landfill Closure Plan (Hydrometrics, 1994). The location of these corrective measures is indicated on Figure 5-1. Closure of the landfill in 1994 prevents addition of any waste to the site and controls the source area by limiting its volume. This measure controls and limits potential future releases of all types of





Scale
In Feet
400 0 400 800

Legend

- Storm Drain Extension
- Alternative Water Supply Boundary
- Clay Cap

Hydrometrics, Inc.

Figure 5-1
Alternative 1:
Existing Corrective Measures
City of Helena Landfill
Helena, Montana

Proj. No: CHHL03 Drawn By: 0083
Dwg. No: 52895013 Last Update: 2/2/95



NORTH

Scale
In Feet
400 0 400 800

Legend

- Storm Drain Extension
- Alternative Water Supply Boundary
- Clay Cap

Hydrometrics, Inc.

Figure 5-1
Alternative 1:
Existing Corrective Measures
City of Helena Landfill
Helena, Montana

Proj. No: CHHL03 Drawn By: 0083
Dwg. No: 52895013 Last Update: 2/2/95



contaminants, not just VOCs. Release of contaminants was further limited by capping the most recently active portion of the landfill during 1994. The mobility of any potential contaminants existing as waste in the landfill is reduced now that precipitation and surface water will no longer generate significant amounts of landfill leachate. Also, the Last Chance Gulch storm sewer was extended past the landfill after it was suspected that infiltrating storm water was flowing into the landfill and generating leachate. These measures were recently implemented and should have measurable impacts on groundwater quality in the near future.

5.2 ALTERNATIVE 2 - LANDFILL GAS EXTRACTION AND TREATMENT

This alternative would include groundwater monitoring, institutional controls, and capture and destruction of landfill gases.

5.2.1 Groundwater Monitoring

Groundwater monitoring would continue in accordance with ARM 16.14.701. Continued monitoring will indicate whether this alternative is resulting in improved groundwater quality and attainment of groundwater protection standards

5.2.2 Institutional Controls

Under this alternative, existing institutional controls would continue to limit risks to human health. A city water supply and prohibition of new wells within city limits reduce human exposure in areas where the groundwater protection standards are not yet attained.

5.2.3 Landfill Gas Extraction

All municipal landfills generate landfill gases as long as organic wastes remain available for biological decomposition. The primary landfill gas generated at the Helena Landfill is methane, a VOC. Methane can be an explosive gas and concentrations within the landfill are presently being monitored in response to public safety issues raised by the MDHES Solid Waste Bureau. Under equilibrium, all VOCs have partitioning constants which govern the fraction of the constituent existing as vapor and dissolved in groundwater.

Removal of methane and other landfill gases will undoubtedly lower the concentrations of VOCs existing as landfill gases and cause more VOC to volatilize from the dissolved groundwater plume. Extraction would also volatilize VOCs existing as liquids within the buried solid waste. Small reductions in dissolved VOCs are likely to have an impact sufficient to attain groundwater protection standards at the relative compliance boundary.

Landfill gas extraction would consist of several extraction wells installed within the limits of the buried solid waste as shown in Figure 5-2. An explosion-proof blower would be used to place a vacuum on these wells. This pressure gradient causes landfill gas to flow to the well and be removed from the landfill area.

5.2.4 Landfill Gas Treatment

Extracted landfill gases are most commonly treated by thermal destruction. This alternative would include destruction of landfill gases, including VOCs, in a landfill gas flare (Figure 5-3). This treatment method is effective at removing VOCs and is commonly used at solid waste landfills.

5.3 ALTERNATIVE 3 - IN-SITU AIR SPARGING

Alternative 3 provides for in-situ air sparging of impacted groundwater as well as continued monitoring and institutional controls.

5.3.1 Groundwater Monitoring

Groundwater monitoring would continue in accordance with ARM 16.14.701. Continued monitoring will indicate whether this alternative is resulting in improved groundwater quality and attainment of groundwater protection standards.

5.3.2 Institutional Controls

Under this alternative, existing institutional controls would continue to limit risks to human health. A city water supply and prohibition of new wells within city limits reduce human exposure in areas where the groundwater protection standards are not yet attained.

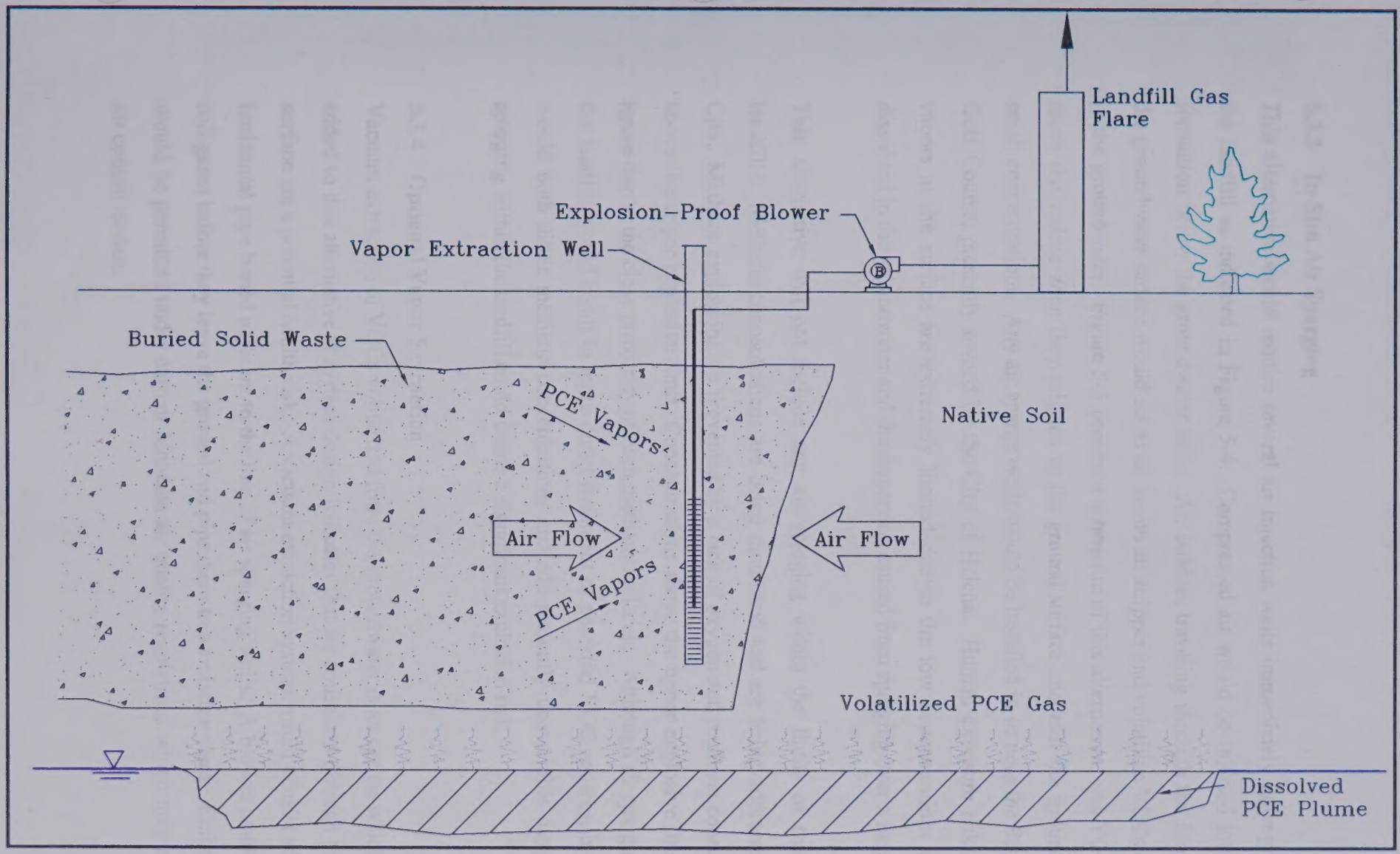


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Figure 5-2
Alternative 2:
Landfill Gas Extraction and Treatment
City of Helena Landfill
Helena, Montana





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Figure 5-3
Alternative 2:
Landfill Gas Extraction Schematic
City of Helena Landfill
Helena, Montana



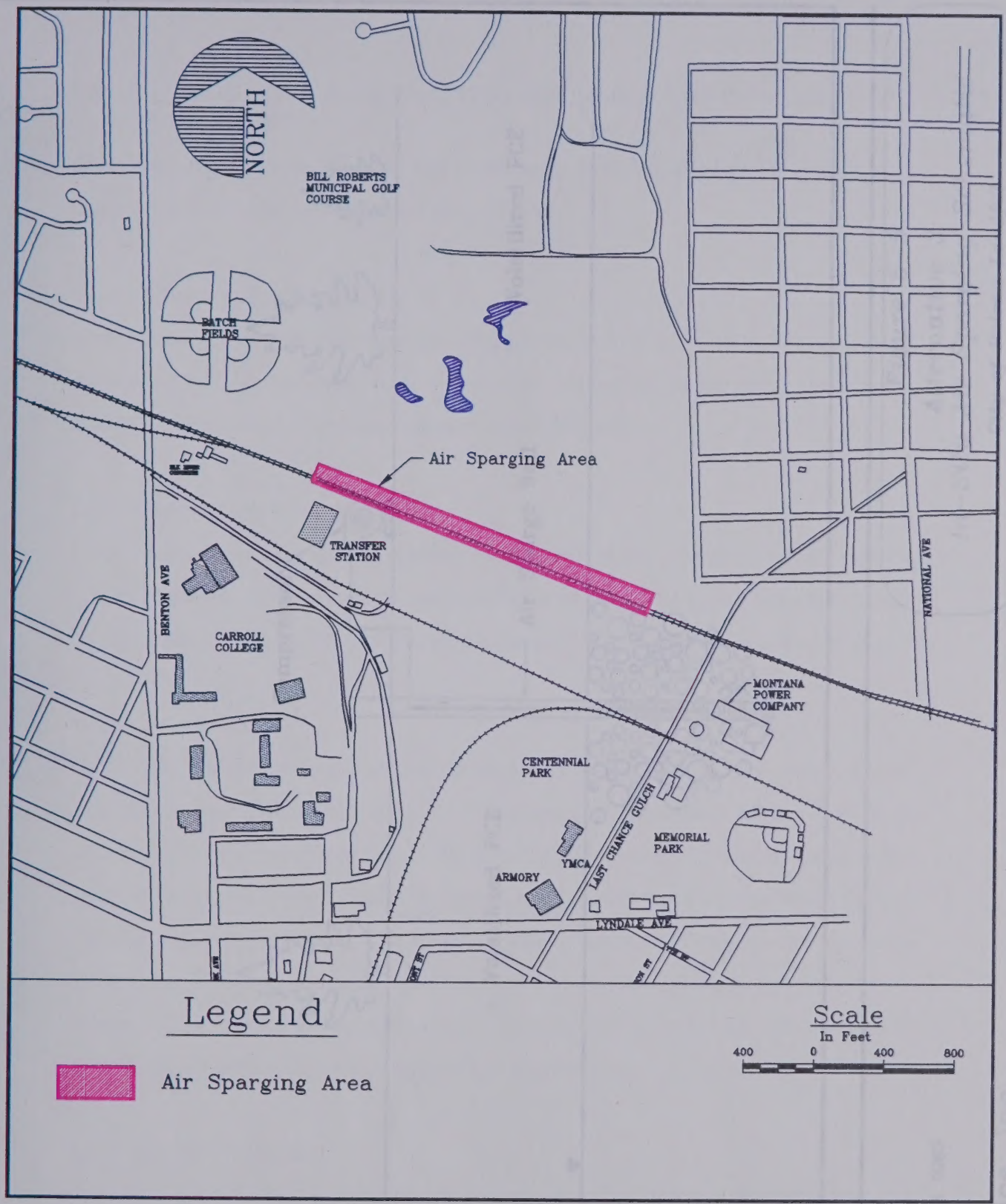
5.3.3 In-Situ Air Sparging

This alternative would require several air injection wells immediately downgradient of the landfill as indicated in Figure 5-4. Compressed air would be injected into the soil formation below the groundwater table. Air bubbles traveling through the formation to the groundwater surface would act as an in-situ air stripper and volatilize VOCs dissolved in the groundwater. Figure 5-5 present a schematic of this alternative. As VOC vapors reach the vadose zone they migrate to the ground surface and exit the ground at very small concentrations. Any air sparge wells would be installed in or near the Bill Roberts Golf Course, presently owned by the City of Helena. Human exposure risks to VOC vapors at the surface are extremely limited due to the low concentrations of VOCs dissolved in the groundwater and the dispersion caused from sparging over a large area.

This alternative will not include any air sparging within the limits of the existing landfills. Methane concentrations are being monitored and are being addressed by the City. Methane explosions are prevented by a lack of oxygen and methane concentrations above the upper explosive limit Concentrations above the upper explosive limit cannot ignite due to the close proximity of each methane molecule. Although air sparging within the landfill would result in more direct treatment of potential VOC sources, injected air would both dilute methane concentrations and add presently unavailable oxygen. Air sparging within the landfill could create a significant explosion risk.

5.3.4 Optional Vapor Extraction

Vacuum extraction of VOCs volitalized from the groundwater is an option which may be added to this alternative if system design indicates that air emissions through the ground surface are a potential health risk. A vacuum extraction system would consist of a slotted horizontal pipe buried adjacent to the line of air sparging wells. A blower would remove soil gases before they leave the ground and pipe them to a emission stack. Emitted VOCs would be permitted under current Montana air quality regulations which may require an air control device.



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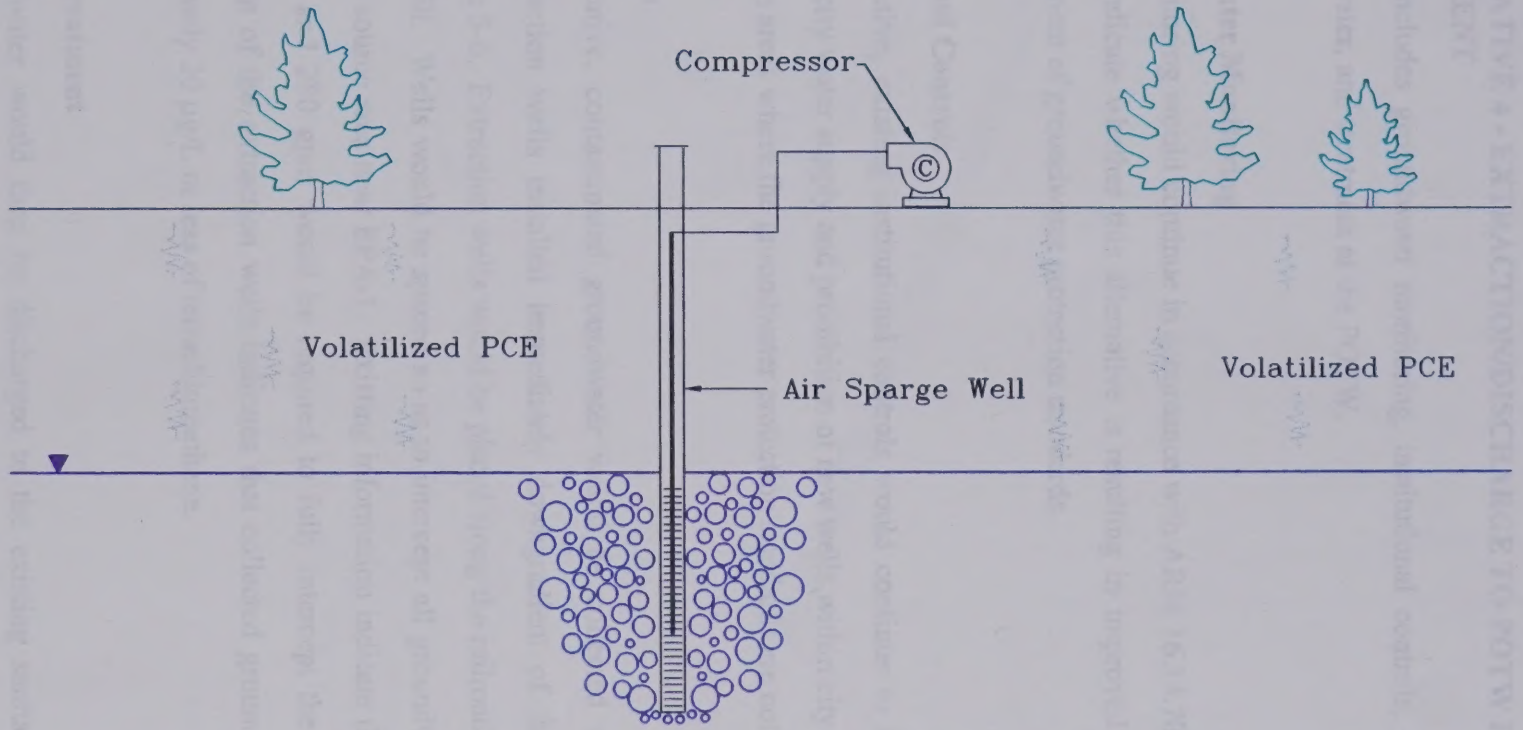
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Figure 5-4

Alternative 3:
In-Situ Air Sparging

City of Helena Landfill
Helena, Montana





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Figure 5-5
Alternative 3:
In-Situ Air Sparging Schematic
City of Helena Landfill
Helena, Montana



5.4 ALTERNATIVE 4 - EXTRACTION/DISCHARGE TO POTW FOR TREATMENT

This alternative includes groundwater monitoring, institutional controls, extraction of impacted groundwater, and treatment at the POTW.

5.4.1 Groundwater Monitoring

Groundwater monitoring would continue in accordance with ARM 16.14.701. Continued monitoring will indicate whether this alternative is resulting in improved groundwater quality and attainment of groundwater protection standards.

5.4.2 Institutional Controls

Under this alternative, existing institutional controls would continue to limit risks to human health. A city water supply and prohibition of new wells within city limits reduce human exposure in areas where the groundwater protection standards are not yet attained.

5.4.3 Extraction

Under this alternative, contaminated groundwater would be collected using several groundwater extraction wells installed immediately downgradient of the landfill as indicated in Figure 5-6. Extraction wells would be placed along the railroad property just north of the landfill. Wells would be spaced so as to intercept all groundwater flowing from the apparent source area near EPA-1. Existing information indicate that flow rates of between 100 and 250 gpm would be required to fully intercept the groundwater plume. Placement of the extraction wells indicates that collected groundwater would contain approximately 20 µg/L or less of tetrachloroethene.

5.4.4 POTW Treatment

Extracted groundwater would then be discharged to the existing sanitary sewer for eventual treatment at the POTW (Figure 5-7). Present treatment processes at the Helena wastewater treatment plant involve biological and physical processes which are applicable for removal of VOCs at these low concentrations.



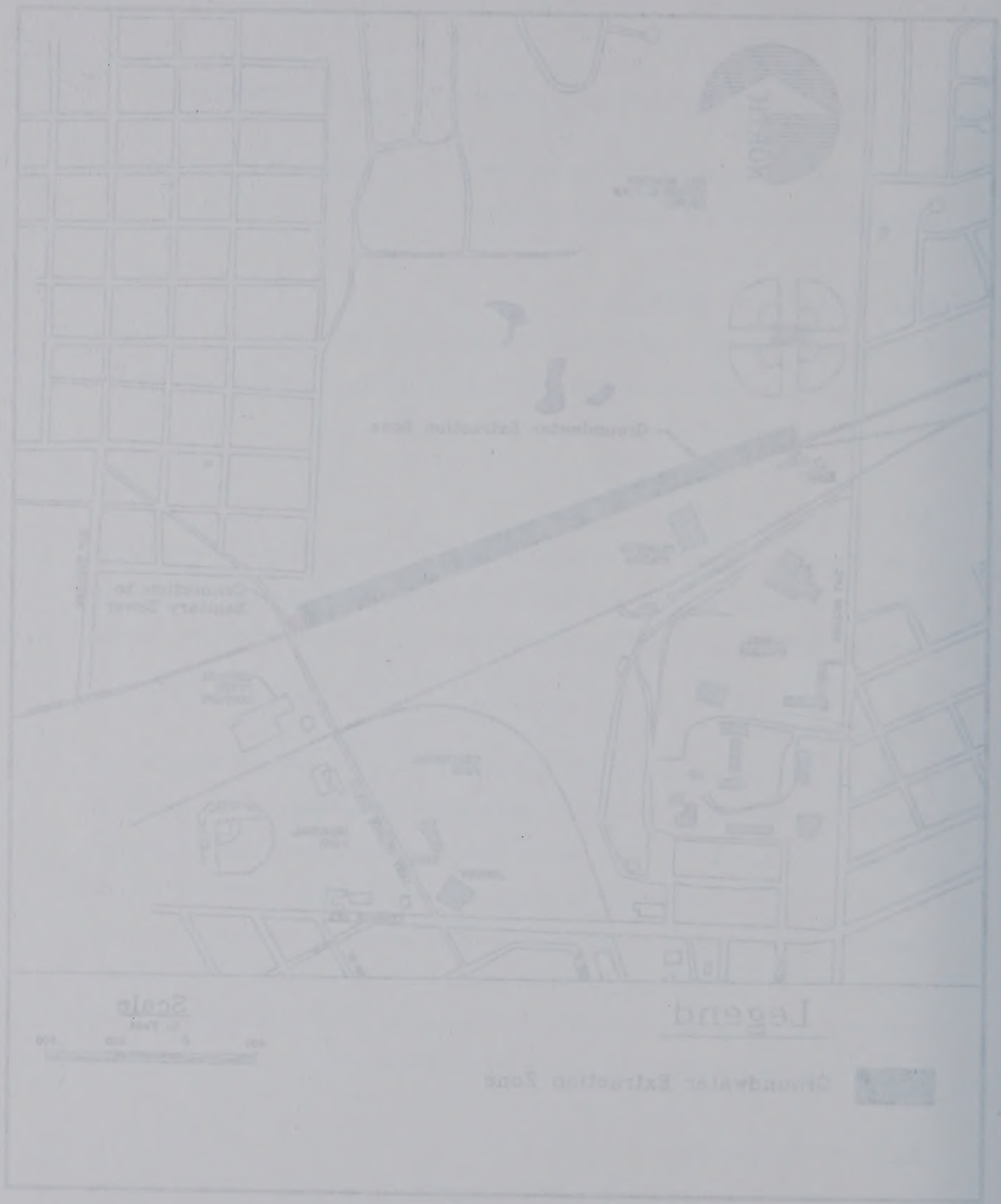
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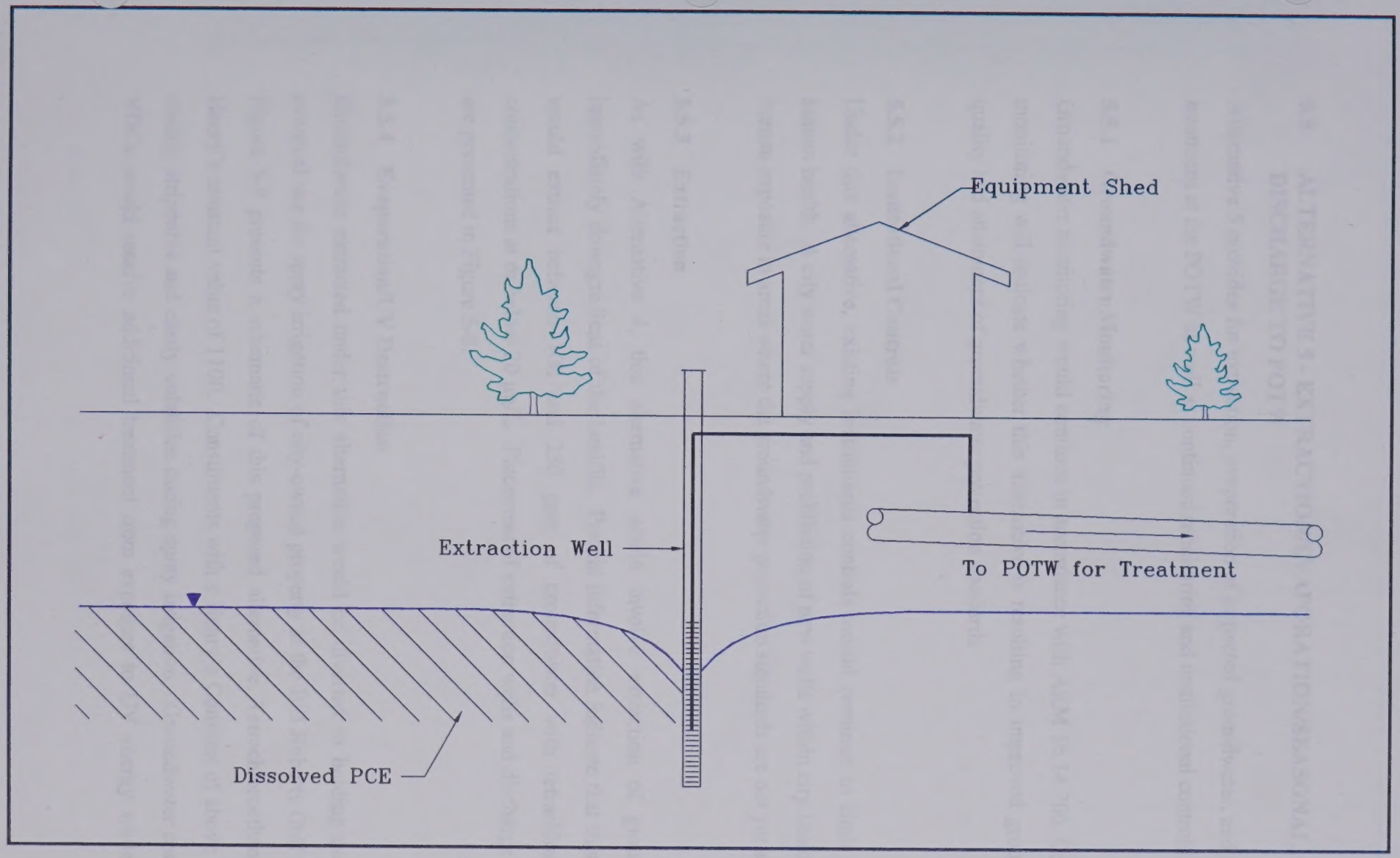
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Figure 5-6

Alternative 4: Groundwater Extraction/Discharge to POTW

City of Helena Landfill
Helena, Montana

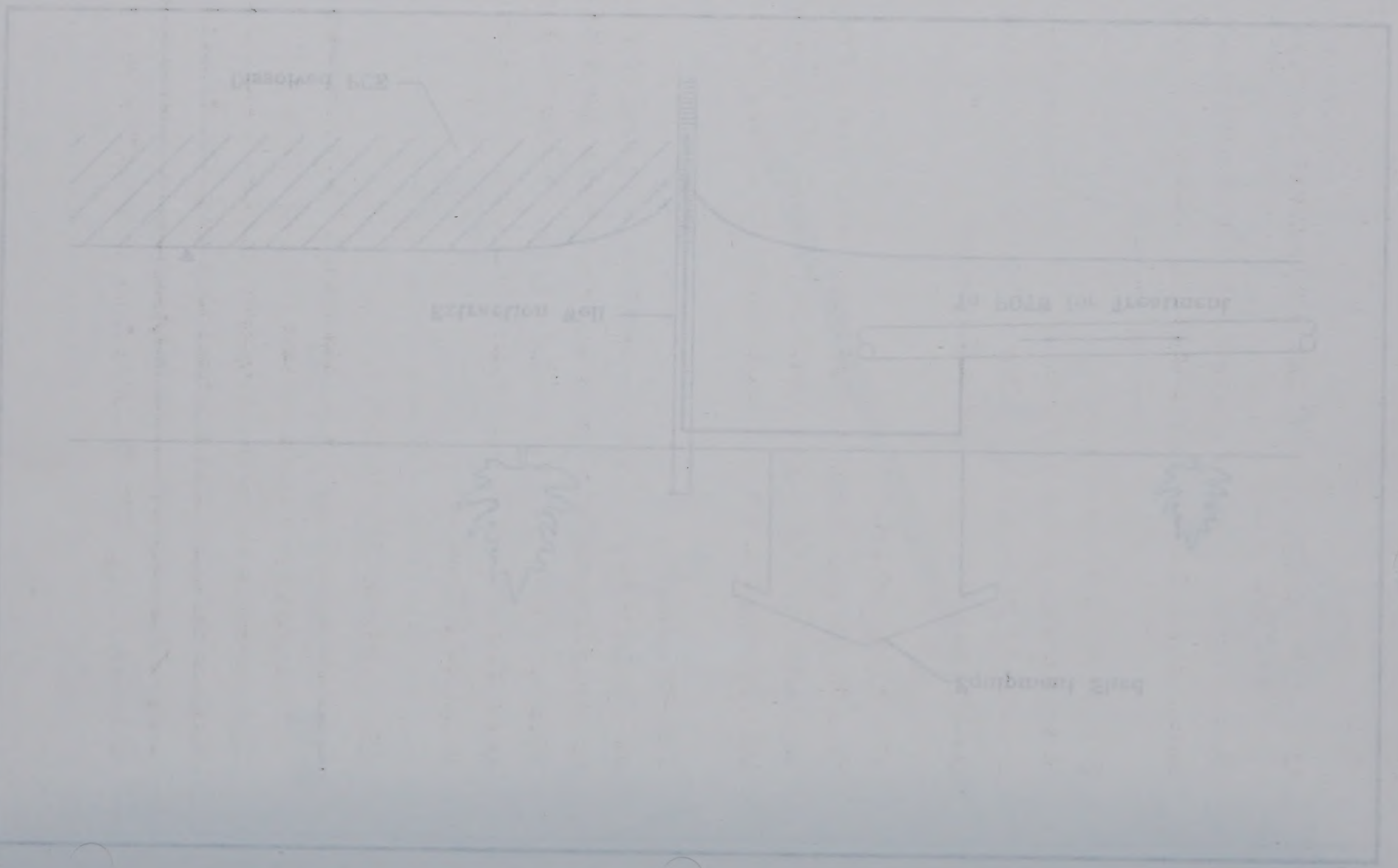




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Hydrometrics, Inc.

Figure 5-7
Alternative 4:
Extraction/Discharge Schematic
City of Helena Landfill
Helena, Montana



5.5 ALTERNATIVE 5 - EXTRACTION/EVAPORATION/SEASONAL DISCHARGE TO POTW

Alternative 5 provides for extraction, evaporation of impacted groundwater, and seasonal treatment at the POTW as well as continued monitoring and institutional controls.

5.5.1 Groundwater Monitoring

Groundwater monitoring would continue in accordance with ARM 16.14.706. Continued monitoring will indicate whether this alternative is resulting in improved groundwater quality and attainment of groundwater protection standards

5.5.2 Institutional Controls

Under this alternative, existing institutional controls would continue to limit risks to human health. A city water supply and prohibition of new wells within city limits reduce human exposure in areas where the groundwater protection standards are not yet attained.

5.5.3 Extraction

As with Alternative 4, this alternative would involve extraction of groundwater immediately downgradient of the landfill. Present information indicate that this system would extract between 100 and 250 gpm of groundwater with tetrachloroethene concentrations at or below 20 µg/L. Placement of extraction wells and discharge options are presented in Figure 5-8.

5.5.4 Evaporation/UV Destruction

Groundwater extracted under this alternative would be diverted to holding ponds for eventual use for spray irrigation of city-owned property at the Bill Roberts Golf Course. Figure 5-9 presents a schematic of this proposed alternative. Tetrachloroethene has a Henry's constant value of 1100. Constituents with a Henry's Constant of above 100 are readily strippable and easily volatilize during spray irrigation. Groundwater containing VOCs would receive additional treatment from exposure to UV energy while in the



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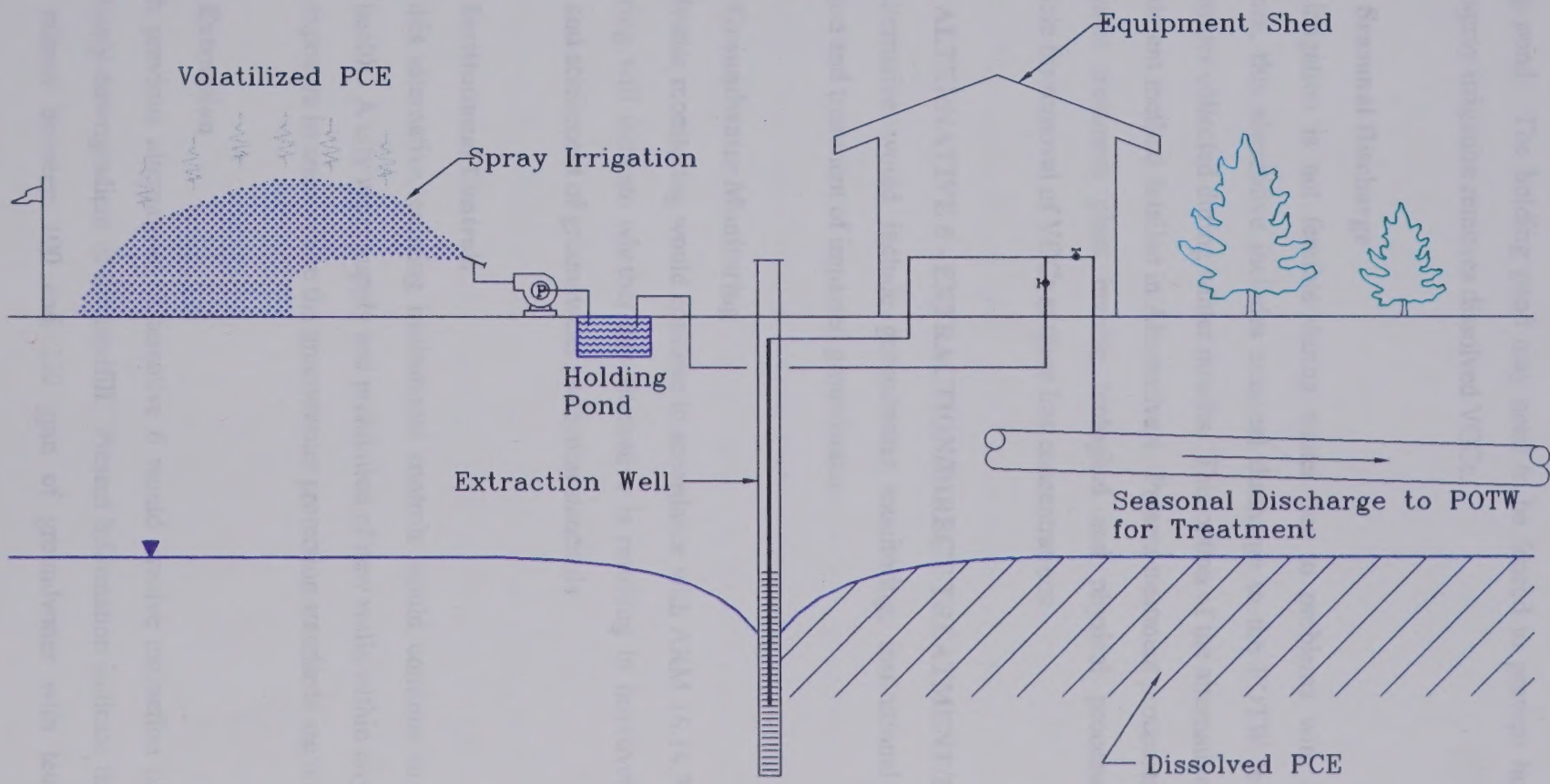
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Figure 5-8

Alternative 5: Groundwater Extraction/ Evaporation/Seasonal Discharge to POTW

City of Helena Landfill
Helena, Montana

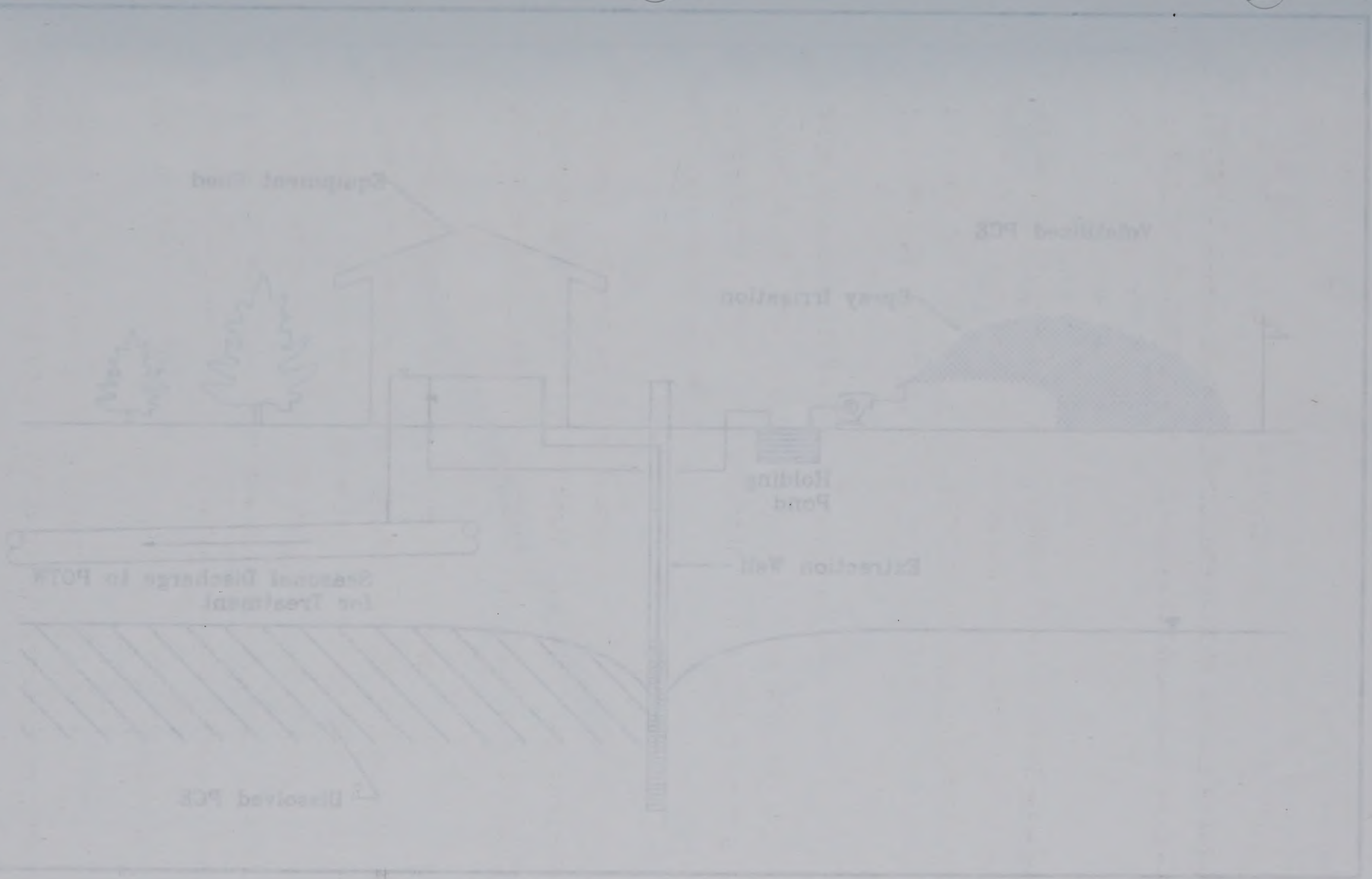




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Figure 5-9
Alternative 5:
Extraction/Evaporation Schematic
City of Helena Landfill
Helena, Montana



holding pond. The holding pond may need to be fenced to prevent human exposure before spray irrigation removes dissolved VOCs.

5.5.5 Seasonal Discharge

Spray irrigation is not feasible during winter due to problems with ice formation. Therefore, this alternative includes seasonal discharge to the POTW for treatment of groundwater collected during winter months. This option of the alternative is identical to the treatment method detailed in Alternative 4. Present treatment processes at the Helena wastewater treatment plant involve biological and physical processes which are applicable for removal of VOCs at these low concentrations.

5.6 ALTERNATIVE 6 - EXTRACTION/DIRECT TREATMENT/DISCHARGE

This alternative would include groundwater monitoring, institutional controls and extraction and treatment of impacted groundwater.

5.6.1 Groundwater Monitoring

Groundwater monitoring would continue in accordance with ARM 16.14.701. Continued monitoring will indicate whether this alternative is resulting in improved groundwater quality and attainment of groundwater protection standards

5.6.2 Institutional Controls

Under this alternative, existing institutional controls would continue to limit risks to human health. A city water supply and prohibition of new wells within city limits reduce human exposure in areas where the groundwater protection standards are not yet attained.

5.6.3 Extraction

As with previous alternatives, Alternative 6 would involve extraction of groundwater immediately downgradient of the landfill. Present information indicate that this system would extract between 100 and 250 gpm of groundwater with tetrachloroethene

concentrations at or below 20 µg/L. Placement of extraction wells and discharge options are presented in Figure 5-10.

5.6.4 Direct Treatment

Groundwater extracted under this alternative would be treated on-site by a new water treatment facility with either an air stripping tower or granular activated carbon (GAC) canisters. Tetrachloroethene is readily volitalized during air stripping and is readily adsorbed in GAC canisters. Determination of the precise treatment option would be based on further analysis of groundwater flow near the landfill and system design. Air stripping is effective at removing high concentrations of dissolved VOC at relatively high flow rates but has significant capital costs. Treatment by adsorption in GAC canisters is effective for the very low concentrations present at the site but becomes prohibitive when large flow rates are required. Existing information indicate that flow rates of between 100 and 250 gpm would be required to fully intercept the groundwater plume. Either treatment option requires regular operation and maintenance. The treatment facility would consist of a heated, winterized building with an air stripper or GAC canisters (Figure 5-11).

5.6.5 Discharge

After treatment, groundwater would be discharged to one of two locations: 1) holding ponds for use as golf course irrigation, or 2) an infiltration gallery constructed downgradient of the treatment facility. Because groundwater contains very low concentrations of VOCs, treatment by either air stripping or GAC adsorption would likely result in an effluent with undetectable levels of tetrachloroethene.



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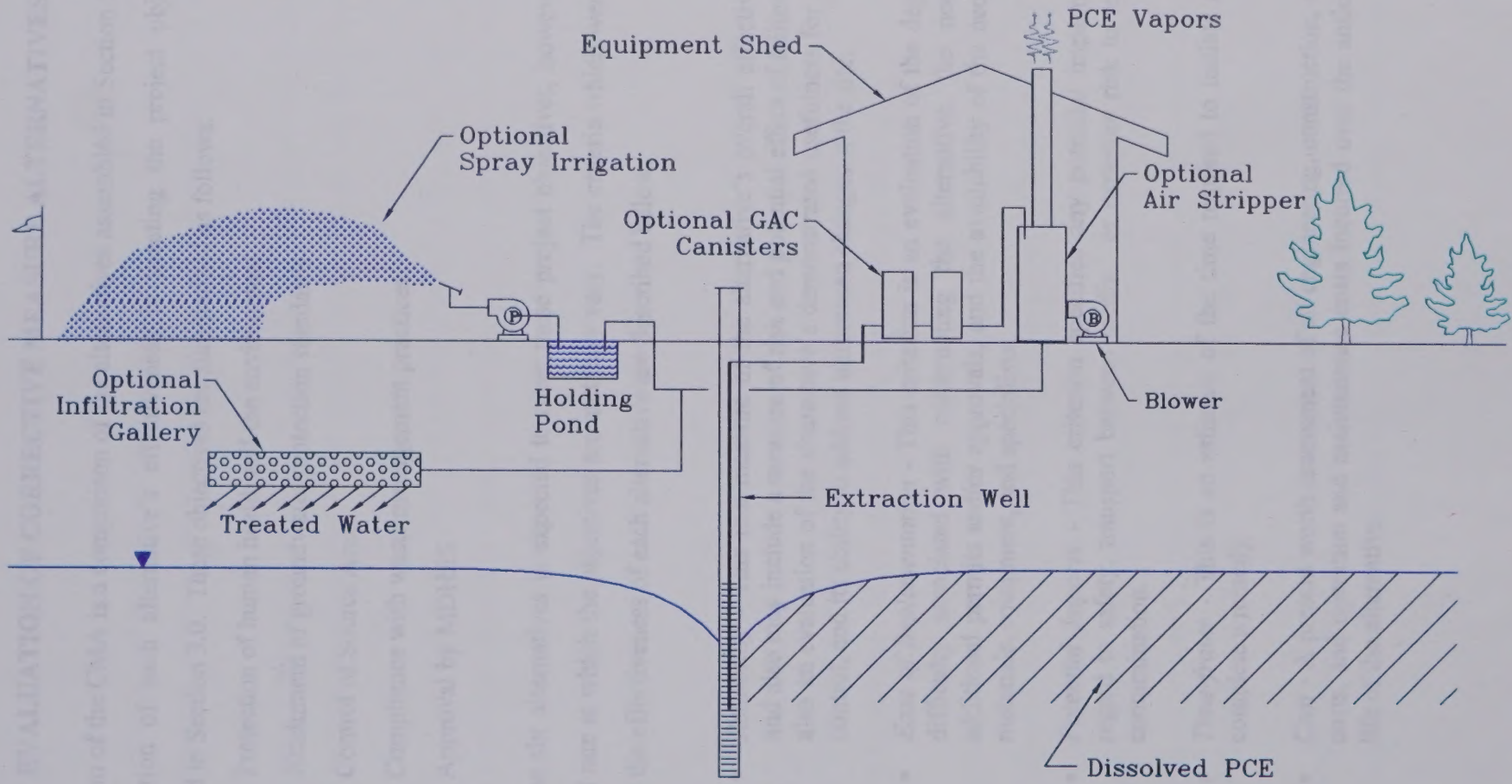
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Figure 5-10

Alternative 6:
Groundwater Extraction/Direct Treatment

City of Helena Landfill
Helena, Montana

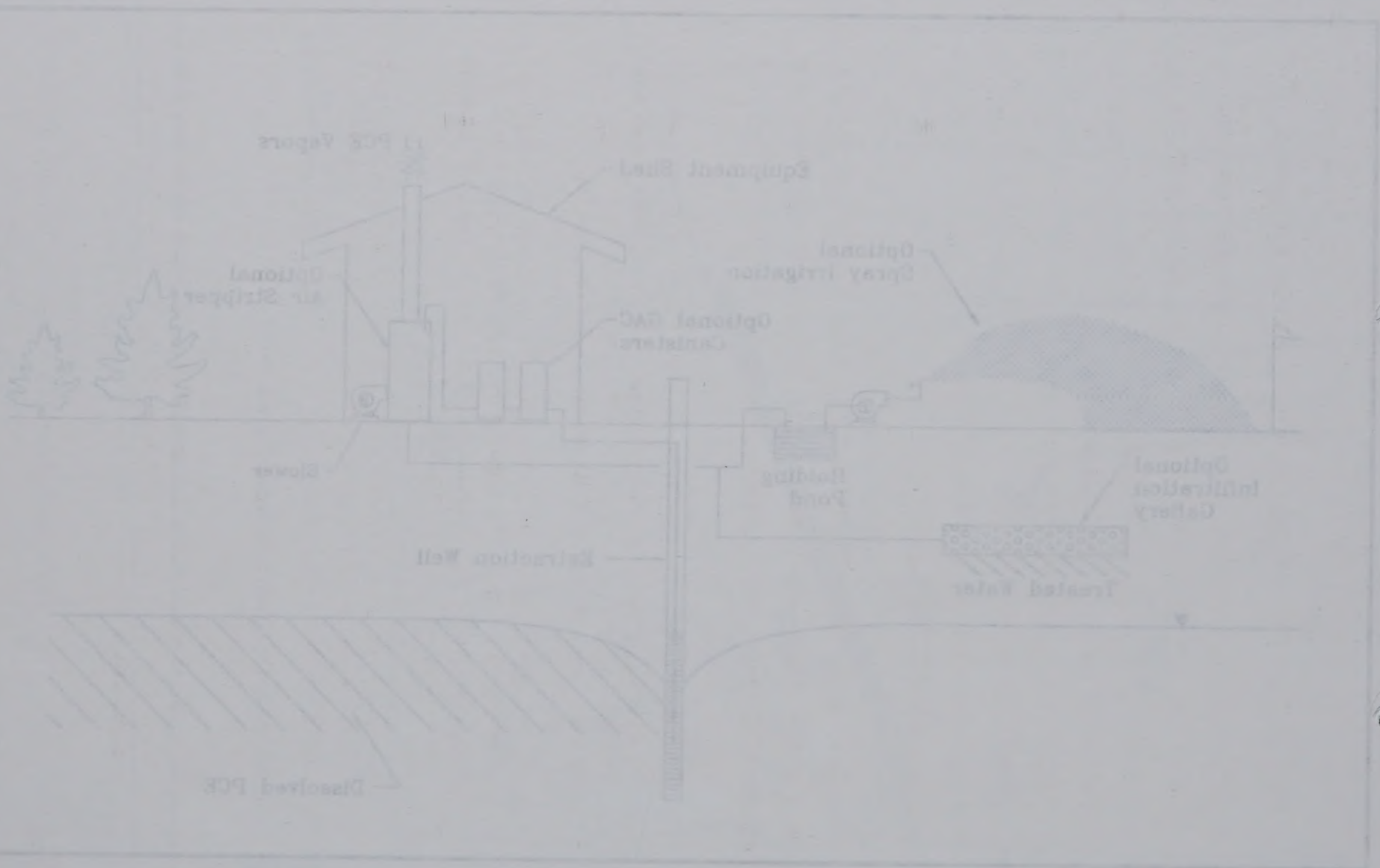




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Figure 5-11
Alternative 6:
Extraction/Direct Treatment Schematic
City of Helena Landfill
Helena, Montana



6.0 EVALUATION OF CORRECTIVE MEASURE ALTERNATIVES

This section of the CMA is a comparison of the alternatives assembled in Section 5.0 and an evaluation of each alternative's effectiveness in meeting the project objectives established in Section 3.0. These objectives are summarized as follows:

- Protection of human health and the environment
- Attainment of groundwater protection standards
- Control of Source Area
- Compliance with waste management practices
- Approval by MDHES

Each of the six alternatives is expected to meet these project objectives, however, the degree and rate at which the objectives are met may vary. The criteria which were used to evaluate the effectiveness of each alternative are described below.

- *Reliability* - This is a measure of the alternative's overall effectiveness, and also may include a measure of risk and potential effect of failure. It is also an evaluation of the alternative's demonstrated usefulness for source control, and its ability to address unforeseen changes at the site.

- *Ease of Implementation* - This criterion is an evaluation of the degree of difficulty associated with constructing the alternative, the need for additional permits and/or approvals, and the availability of the necessary materials, equipment, and specialists.

- *Potential Impacts* - This criterion specifies any potential impacts with regard to safety, transport between media, or exposure risk to residual contamination.

- *Time-frame* - This is an estimate of the time required to initiate and to complete a remedy.

- *Cost* - A present worth assessment of all engineering, construction, capital costs, and operation and maintenance costs incurred over the anticipated life of the alternative.

In addition to these criteria, two modifying criteria were considered as per ARM 14.16.708:

- Technical and economic capability of the owner
- Degree to which the alternative addresses community concerns

These modifying criteria allow alternatives which are considered favorable according to the primary evaluation, to be evaluated and selected according to the modifying criteria.

6.1 ALTERNATIVE 1: EXISTING CORRECTIVE MEASURES

Existing corrective measures which have already been implemented by the City include:

- Closure of the landfill (building transfer station)
- Clay capping on newest landfill area
- Extending the storm drain north of the landfill

Several institutional controls which are protective to human health also exist. These include the City's supply of drinking water to residents northwest of the landfill to Custer Avenue, a City ordinance which forbids the use of groundwater in the area as a potable source, and a ban on water well drilling within the city limits (Section 5.1.2).

6.1.1 Reliability

Several of the existing corrective measures have been implemented in the past 12 to 18 months and the effectiveness of these measures has not yet been evaluated. However, closure of the landfill is a significant means of controlling the source of contamination, and conditions are expected to improve with time. Because of the apparent extremely low risk which exists at the site, this alternative is considered to be reliable.

6.1.2 Ease of Implementation

This alternative has already been implemented and cannot be evaluated for this criterion.

6.1.3 Potential Impacts

No cross media contamination, or increased exposure or safety concerns are anticipated with this alternative.

6.1.4 Time-frame

This alternative has already been initiated and evaluation of its effectiveness will be achieved by continued groundwater monitoring as required by ARM 16.14.701. It is anticipated that improved conditions at the compliance boundary should be evident within 2 to 5 years. This time estimate is based on potential travel times from the apparent source area (near well EPA-1) to the relative compliance boundary near HL-90-1. Tetrachloroethene concentrations in EPA-1 have declined since 1992, and this decline may be evident at the compliance boundary within this time-frame.

6.1.5 Costs

The City of Helena (and its residents) have spent a substantial amount of money on the existing corrective measures. Closing the landfill, and other corrective measures, have cost the city $557,000 to date.

In addition, the present worth cost of continued groundwater monitoring and evaluation of this alternative is expected to be approximately $507,000 over a 30-year period (Table 6-1).

6.2 ALTERNATIVE 2: LANDFILL GAS EXTRACTION/ LANDFILL GAS FLARE

This alternative includes the installation of a network of landfill gas extraction wells and collecting and burning landfill gas. This process is described in Section 5.2.

6.2.1 Reliability

Several studies of the effect of landfill gas extraction on water quality have been performed. These studies have demonstrated that significant improvement in water

TABLE 6-1
Cost Estimate for Alternative 1: Existing Corrective Action

Description		First Year Capital Costs	Annual O&M Costs
Direct Costs			
Future Capital Costs **		$0	
Groundwater Monitoring/Evaluation			$33,000
	Subtotal:	$0	$33,000
Indirect Costs			
Engineering (15% of Direct Cost)		$0	
Contingency (20% of Direct Costs)		$0	
Legal & Admin. (3% of Direct Costs)		$0	
Insurance/Taxes (2% of Direct Costs)		$0	
	Subtotal:	$0	$0
Total Alternative Costs:			
	Total Costs:	$0	$33,000
	*Discount Factor:	1	15.372
	Present Worth:	$0	$507,276

Total Present Worth: **$507,276**

* Assumes 30 year design life and 5% annual interest.

** Capital cost does not include the cost for corrective measures already implemented by the city so that costs for all alternatives could be directly compared. Costs associated with existing corrective measures are described in Section 6.1.

quality can be obtained by controlling the migration of landfill gas. This alternative has a good potential to meet the project objectives.

6.2.2 Ease of Implementation

This technology has a demonstrated implementability and has been used extensively for landfill gas control. Materials and equipment to implement this remedy are readily available, however, this remedy would require an air emissions permit from the Montana Department of Health and Environmental Sciences.

6.2.3 Potential Impacts

Exposure to landfill gases (including methane, and hydrogen sulfide) is a serious risk for construction personnel. Special safety considerations would be necessary if this remedy is selected.

6.2.4 Time-frame

This alternative could be implemented within one year of selection. Assuming that landfill gas is a major contributor to the VOC content in the groundwater, it would be expected that improved groundwater conditions would be apparent within two years and project objectives would be met in 7 to 10 years.

6.2.5 Costs

Table 6-2 shows the estimated present worth $1,332,000 of this alternative assuming that the remedy is utilized for thirty years.

6.3 ALTERNATIVE 3: IN-SITU AIR SPARGING

This alternative includes the installation of a network of air sparging wells just north of the landfilled areas, and is described in Section 5.3.

TABLE 6-2
Cost Estimate for Alternative 2: Landfill Gas Extraction and Treatment

Description		First Year Capital Costs	Annual O&M Costs
Direct Costs			
Installation of Extraction System		$156,000	
Installation of Vapor Treatment Flare		$60,000	
Operation and Maintenance			$34,000
Groundwater Monitoring/Evaluation			$33,000
	Subtotal:	$216,000	$67,000
Indirect Costs			
Engineering (15% of Direct Cost)		$32,400	
Contingency (20% of Direct Costs)		$43,200	
Legal & Admin. (3% of Direct Costs)		$6,480	
Insurance/Taxes (2% of Direct Costs)		$4,320	
	Subtotal:	$86,400	$0
Total Alternative Costs:			
	Total Costs:	$302,400	$67,000
	*Discount Factor:	1	15.372
	Present Worth:	$302,400	$1,029,924

Total Present Worth: **$1,332,324**

* Assumes 30 year design life and 5% annual interest.
Capital cost does not include the cost for corrective measures already implemented by the city so that costs for all alternatives could be directly compared. Costs associated with existing corrective measures are described in Section 6.1.

6.3.1 Reliability

Air-sparging is a commonly used technology for removing volatile constituents from groundwater. Tetrachloroethene has a Henry's constant value (measure of the strippability of a constituent) of 1100. Constituents with a Henry's Constant of above 100 are readily strippable and considered candidates for air sparging. This remedy would be effective in controlling downgradient concentrations of VOCs in groundwater but will not effectively reduce or control the source area.

6.3.2 Ease of Implementation

This technology has a demonstrated implementability and has been used extensively for remediation of petroleum spills. Materials and equipment to implement this remedy are readily available. This remedy may require vapor extraction and an air emissions permit from the Montana Department of Health and Environmental Sciences.

6.3.3 Potential Impacts

Potential impacts of this alternative include a potential for exposure of people to volatilized constituents in the air. In addition, this remedy may potentially mobilize or generate other constituents more toxic than the VOCs which already exist.

6.3.4 Time-frame

This alternative could be implemented within one year of selection. Because of this alternative's proximity to the relative compliance boundary, an improvement in water quality at the compliance wells would likely be noticed within the first year or two. The completion time for this remedy would be the same as for Alternative 1 because no additional source control is achieved.

6.3.5 Costs

Table 6-3 shows the estimated present worth of this alternative is $910,000 assuming that the remedy is utilized for 30 years.

TABLE 6-3
Cost Estimate for Alternative 3: In-Situ Air Sparging

Description		First Year Capital Costs	Annual O&M Costs
Direct Costs			
Installation of Air Sparging System		$90,000	
Operation and Maintenance			$18,000
Groundwater Monitoring/Evaluation			$33,000
	Subtotal:	$90,000	$51,000
Indirect Costs			
Engineering (15% of Direct Cost)		$13,500	
Contingency (20% of Direct Costs)		$18,000	
Legal & Admin. (3% of Direct Costs)		$2,700	
Insurance/Taxes (2% of Direct Costs)		$1,800	
	Subtotal:	$36,000	$0
Total Alternative Costs:			
	Total Costs:	$126,000	$51,000
	*Discount Factor:	1	15.372
	Present Worth:	$126,000	$783,972

Total Present Worth: **$909,972**

* Assumes 30 year design life and 5% annual interest.
Capital cost does not include the cost for corrective measures already implemented by the city so that costs for all alternatives could be directly compared. Costs associated with existing corrective measures are described in Section 6.1.

This cost estimate does not include costs for the optional vapor extraction system.

6.4 ALTERNATIVE 4: GROUNDWATER EXTRACTION\ DISCHARGE TO POTW

This alternative includes the installation of a network of groundwater extraction wells to intercept the groundwater plume. The water will then be piped to the City's sanitary sewer for transport to the treatment plant on Custer Avenue. Section 5.4 describes this alternative .

6.4.1 Reliability

This alternative would result in improvement in groundwater quality at the compliance boundary within the first year or two, but will also result in a regional lowering in the water table. This remedy would be effective in controlling migration of contaminants downgradient of the compliance boundary but will not effectively reduce or control the source area.

6.4.2 Ease of Implementation

This technology has a demonstrated implementability and has been used extensively for controlling migration of contaminants. Pump and treat technology is effective as a hydraulic control, however, it has no desirable effects in the source area. This remedy will require an analysis of the POTW's ability to handle the quantity of water extracted, and its ability to effectively treat the water and maintain the discharge quality requirements of Montana Department of Health and Environmental Sciences.

6.4.3 Potential Impacts

The extraction of groundwater from the site and off-site treatment will result in a consumptive use of the water. This impact may have wide spread implications to downgradient water users, and water rights holders.

6.4.4 Time-frame

This alternative could be implemented within one year of selection. Because of this alternative's proximity to the relative compliance boundary, an improvement in water quality at the compliance wells would likely be noticed within the first year or two. The

completion time for this remedy would be the same as for Alternative 1 because no additional source control is achieved.

6.4.5 Costs

Table 6-4 shows the estimated present worth of this alternative is $1,090,000 assuming that the remedy is utilized for 30 years.

6.5 ALTERNATIVE 5: GROUNDWATER EXTRACTION\EVAPORATION\ SEASONAL DISCHARGE TO POTW

This alternative includes the installation of a network of groundwater extraction wells to intercept the groundwater plume. During the irrigation season, the water will be used for irrigation of the golf course or the ball fields owned by the city. Irrigation will aerate the water and expose the VOCs to destructive UV energy. During the off-season the water will be piped to the City's sanitary sewer for transport to the treatment plant on Custer Avenue. Section 5.5 describes this alternative .

6.5.1 Reliability

This alternative would require substantial treatability testing to determine if the VOCs were effectively treated during the irrigation process. If successful, this remedy would achieve timely improvements in groundwater quality at the compliance boundary, but will also result in a regional lowering of the water table. This remedy would be effective in controlling migration of contaminants downgradient of the compliance boundary but will not effectively reduce or control the source area.

6.5.2 Ease of Implementation

This technology has a demonstrated implementability and has been used extensively for controlling migration of contaminants. Pump and treat technology is effective as a hydraulic control, however, it has no desirable effects in the source area. A treatability test of the effectiveness of irrigation for treating the VOC's would be necessary prior to

TABLE 6-4
Cost Estimate for Alternative 4: Groundwater Extraction\Discharge to POTW

Description		First Year Capital Costs	Annual O&M Costs
Direct Costs			
Installation of Extraction Well System		$123,000	
Install Pipeline/Connection to Sewer		$30,000	
Operation and Maintenance			$24,000
Groundwater Monitoring/Evaluation			$33,000
	Subtotal:	$153,000	$57,000
Indirect Costs			
Engineering (15% of Direct Cost)		$22,950	
Contingency (20% of Direct Costs)		$30,600	
Legal & Admin. (3% of Direct Costs)		$4,590	
Insurance/Taxes (2% of Direct Costs)		$3,060	
	Subtotal:	$61,200	$0
Total Alternative Costs:			
	Total Costs:	$214,200	$57,000
	*Discount Factor:	1	15.372
	Present Worth:	$214,200	$876,204

Total Present Worth: **$1,090,404**

* Assumes 30 year design life and 5% annual interest.
Capital cost does not include the cost for corrective measures already implemented by the city so that costs for all alternatives could be directly compared. Costs associated with existing corrective measures are described in Section 6.1.

implementation. This remedy will also require an analysis of the POTW's ability to handle the quantity of water extracted, and its ability to effectively treat the water and maintain the discharge quality requirements of Montana Department of Health and Environmental Sciences.

6.5.3 Potential Impacts

The extraction of groundwater from the site and off-site treatment will result in a seasonal consumptive use of the water, although during the irrigation season some of the water will be restored by infiltration. This impact may have wide spread implications to downgradient water users, and water rights holders, although less than alternative 4.

6.5.4 Time-frame

This alternative could be implemented within one year of selection. Because of this alternative's proximity to the relative compliance boundary, an improvement in water quality at the compliance wells would likely be noticed within the first year or two. The completion time for this remedy would be the same as for Alternative 1 because no additional source control is achieved.

6.5.5 Costs

Table 6-5 shows the estimated present worth of this alternative is $1,064,000 assuming that the remedy is utilized for 30 years.

6.6 ALTERNATIVE 6: GROUNDWATER EXTRACTION\DIRECT TREATMENT\DISCHARGE

This alternative includes the installation of a network of groundwater extraction wells to intercept the groundwater plume. Collected water will be treated by granular activated carbon (GAC) or air-stripping. These two treatment technologies are considered to be best applicable technologies (BAT) for treatment of tetrachloroethene. Selection of the appropriate treatment technology would be based on an economic analysis during system

TABLE 6-5
Cost Estimate for Alternative 5: Groundwater Extraction \Evaporation\Seasonal Discharge to POTW

Description		First Year Capital Costs	Annual O&M Costs
Direct Costs			
Installation of Extraction Well System		$123,000	
Install Pipeline/Connection to Sewer		$30,000	
Install Pipeline for Irrigation		$14,000	
Operation and Maintenance			$21,000
Groundwater Monitoring/Evaluation			$33,000
	Subtotal:	$167,000	$54,000
Indirect Costs			
Engineering (15% of Direct Cost)		$25,050	
Contingency (20% of Direct Costs)		$33,400	
Legal & Admin. (3% of Direct Costs)		$5,010	
Insurance/Taxes (2% of Direct Costs)		$3,340	
	Subtotal:	$66,800	$0
Total Alternative Costs:			
	Total Costs:	$233,800	$54,000
	*Discount Factor:	1	15.372
	Present Worth:	$233,800	$830,088

Total Present Worth: **$1,063,888**

* Assumes 30 year design life and 5% annual interest.

** Capital cost does not include the cost for corrective measures already implemented by the city so that costs for all alternatives could be directly compared. Costs associated with existing corrective measures are described in Section 6.1.

design. Treated water would be used for irrigation or infiltrated as described in Section 5.6.

6.6.1 Reliability

This alternative would be effective in achieving the project objectives, except for source control. This technology is widely used and both GAC and air-stripping systems are reliable if properly maintained. This remedy would be effective in controlling migration of contaminants downgradient of the compliance boundary but will not effectively reduce or control the source area.

6.6.2 Ease of Implementation

This technology has a demonstrated implementability and has been used extensively for controlling migration of contaminants. Pump and treat technology is effective as a hydraulic control, however, it has no desirable effects in the source area. Equipment and expertise for implementing this remedy is readily available. Permitting would likely be required for reinjecting (infiltration gallery). A heated building may be necessary to enclose air stripping and/or GAC equipment during winter months.

6.6.3 Potential Impacts

No cross media contamination, or increased exposure or safety concerns are anticipated with this alternative.

6.6.4 Time-frame

This alternative could be implemented within one year of selection. Because of this alternative's proximity to the relative compliance boundary, an improvement in water quality at the compliance wells would likely be noticed within the first year or two. The completion time for this remedy would be the same as for Alternative 1 because no additional source control is achieved.

6.6.5 Costs

Tables 6-6 and 6-7 show the estimated present worth of this alternative ranges from $1,300,000 to $1,817,000 assuming that the remedy is utilized for 30 years.

6.7 COMPARISON OF ALTERNATIVES

Table 6-7 is a summary of the evaluation of the primary criteria for each of the six alternatives. All of the alternatives will meet, or potentially meet, the project objectives within a reasonable amount of time. Only Alternative 2 will significantly reduce the source of VOCs to groundwater, however, all of the other alternatives are protective of human health and the environment. The six alternatives can all be implemented with existing and readily available resources, however, Alternative 1 ranks highest in this category since it has already been implemented. Alternatives 4, 5 and 6 will allow for meeting the groundwater protection standard for tetrachloroethene at the compliance boundary within the shortest time frame, however, existing institutional controls on land and water usage in the plume area effectively protect human health, and a longer time-frame for meeting the GWPS could be acceptable. Because of the similar ranking of each of the alternatives, it is appropriate to apply the modifying criteria (community concerns and cost) for alternative selection. Alternative 1 is clearly the most cost effective remedy. Community concerns will have to be assessed during a public review period and public meeting. Due to several considerations (low risk, protective institutional controls, recently completed corrective measures, and high costs of other alternatives), Alternative 1 is considered by the city to be the most appropriate site remedy.

TABLE 6-6
Cost Estimate for Alternative 6: Groundwater Extraction
\Direct Treatment\Discharge - Air Stripping Option

Description		First Year Capital Costs	Annual O&M Costs
Direct Costs			
Installation of Extraction Well System		$133,000	
Installation of Air Stripper		$40,000	
Install Pipeline for Irrigation/Infiltration		$14,000	
Operation and Maintenance			$34,000
Groundwater Monitoring/Evaluation			$33,000
	Subtotal:	$187,000	$67,000
Indirect Costs			
Engineering (15% of Direct Cost)		$28,050	
Contingency (20% of Direct Costs)		$37,400	
Legal & Admin. (3% of Direct Costs)		$5,610	
Insurance/Taxes (2% of Direct Costs)		$3,740	
	Subtotal:	$74,800	$0

Total Alternative Costs:

Total Costs:	$261,800	$67,000
*Discount Factor:	1	15.372
Present Worth:	$261,800	$1,029,924

Total Present Worth: **$1,291,724**

* Assumes 30 year design life and 5% annual interest.
Capital cost does not include the cost for corrective measures already implemented by the city so that costs for all alternatives could be directly compared. Costs associated with existing corrective measures are described in Section 6.1.

TABLE 6-7
Cost Estimate for Alternative 6: Groundwater Extraction
\Direct Treatment\Discharge - GAC Adsorption Option

Description		First Year Capital Costs	Annual O&M Costs
Direct Costs			
Installation of Extraction Well System		$133,000	
Installation of Parallel GAC System		$80,000	
Install Pipeline for Irrigation/Infiltration		$14,000	
Operation and Maintenance			$64,000
Groundwater Monitoring/Evaluation			$33,000
	Subtotal:	$227,000	$97,000
Indirect Costs			
Engineering (15% of Direct Cost)		$34,050	
Contingency (20% of Direct Costs)		$45,400	
Legal & Admin. (3% of Direct Costs)		$6,810	
Insurance/Taxes (2% of Direct Costs)		$4,540	
	Subtotal:	$90,800	$0
Total Alternative Costs:			
	Total Costs:	$317,800	$97,000
	*Discount Factor:	1	15.372
	Present Worth:	$317,800	$1,491,084

Total Present Worth: **$1,808,884**

* Assumes 30 year design life and 5% annual interest.
Capital cost does not include the cost for corrective measures already implemented by the city so that costs for all alternatives could be directly compared. Costs associated with existing corrective measures are described in Section 6.1.

TABLE 6-8
EVALUATION OF ALTERNATIVES

Evaluation Criteria	Alternative 1 Existing Corrective Action	Alternative 2 Landfill Gas Extraction/ Landfill Gas Flare	Alternative 3 In-Situ Air Sparging	Alternative 4 Extraction/ Discharge to POTW for Treatment	Alternative 5 Extraction/ Evaporation/ Seasonal Treatment at POTW	Alternative 6 Extraction/ Direct Treatment/ Discharge
Reliability	⊙	⊙	⊙	●	⊙	●
Ease of Implementation	●	●	●	⊙	⊙	⊙
Potential Impacts	None	Construction safety concerns	Mobilization of other substances	Consumptive water use/VOC load on POTW	Consumptive water use/ exposure during spraying/ VOC load on POTW	None
Time Frames (years)	Implement - 0 Reach goals - 15Monitor - 30	Implement - 1 Reach goals - 10 Operate - 30	Implement - 1 Reach goals - 15 Operate - 30	Implement - 1 Reach goals - 15 Operate - 30	Implement - 1 Reach goals - 15 Operate - 30	Implement - 1 Reach goals - 15 Operate - 30
Preliminary Total Present Worth	$507,000	$1,332,000	$910,000	$1,090,000	$1,064,000	$1,300,000 Air Stripping to $1,817,000 GAC

● Meets criterion
⊙ Has potential to meet criterion
○ Does not meet criterion

POTW Publicly owned treatment works
GAC Granular activated carbon

7.0 PREFERRED CORRECTIVE ALTERNATIVE

The preferred corrective measure chosen by the city must fulfill the requirements specified in ARM 16.14.708. These requirements are:

- Protection of Human Health and the Environment
- Attainment of Groundwater Protection Standards
- Control the Source of Releases
- Comply with Waste Management Standard

The preferred alternative identified in the screening process (Alternative 1) must be demonstrated to meet these requirements. This section describes the chosen alternative's ability to comply with these requirements.

7.1 PROTECTION OF HUMAN HEALTH AND ENVIRONMENT

Section 2.5 describes the degree of risk to human health and the environment present at the landfill. Groundwater quality for all constituents monitored except tetrachloroethene are within compliance or already meet the cleanup requirements promulgated by MDHES, at the relative compliance boundary. Institutional controls already in place are protective of human health in the residential area northwest of the landfill. Because of a demonstrated additional source of tetrachloroethene south of this residential area, a more aggressive remedy would likely have little or no effect on potential risk to human health or the environment.

7.2 ATTAINMENT OF GROUNDWATER PROTECTION STANDARDS

Section 2.0 of this document demonstrates that water quality for all constituents detected in groundwater at the site meet the groundwater protection standards (GWPS) at the compliance boundary, except for tetrachloroethene. While tetrachloroethene is slightly above the GWPS (5 ppb) at the compliance boundary, it has been demonstrated that actual risk associated with the tetrachloroethene in the water is extremely low (well within the acceptable risk levels established by MDHES for parameters without MCL's).

The corrective measures which have been implemented by the City will be protective during the time period in which the GWPs will be attained by natural processes. Furthermore, ARM 16.14.708(7)(e) states that the MDHES may determine that remediation of a release of Table 2 (ARM 16.14.706) constituents from a disposal unit is impractical:

> (I) *The groundwater is additionally contaminated by substances that have originated from a source other than a disposal unit and those substances are present in concentrations such that cleanup of the release from the disposal unit would provide no significant reduction in risk to actual or potential receptors; or*
>
> (ii) *The constituent(s) is present in groundwater that :*
>
> (A) *Is not currently or reasonably expected to be a source of drinking water; and*
>
> (B) *Is not hydraulically connected with waters to which the hazardous constituents are migrating or are likely to migrate in a concentration(s) that would exceed the groundwater protection standards established...*

Because of the additional source of the tetrachloroethene to the area downgradient of the landfill, it is likely that more aggressive cleanup (past the existing corrective measures) will not significantly reduce risk to receptors. In addition, institutional controls already established designate that the groundwater most highly impacted is not and cannot be used as a source of drinking water, and at no time has the tetrachloroethene been detected in a source of drinking water at levels greater than the groundwater protection standard.

7.3 CONTROL OF SOURCE AREA

ARM 16.14.708(7)(b)(iii) states that the remedy must:

> *Control the source(s) of releases as to reduce or eliminate, to the maximum extent practicable, further releases of Table 2 (ARM 16.14.706) constituents into the environment that may pose a threat to human health or the environment.*

Closure of the landfill has ensured that the source area will not be enlarged, and further releases that pose a threat to human health or the environment are not anticipated. Because of the extremely low risk level associated with present conditions of the landfill, further source control would not be practicable. Capping landfilled areas (according to the Montana regulations for the time period in which each landfilled area was capped) also serves to control the source.

7.4 COMPLIANCE WITH WASTE MANAGEMENT STANDARDS

ARM 16.14.708(7)(b)(iv) states that the remedy will:

> *Comply with standards for management of wastes as specified in ARM 16.14.708(8).*

These standards include requirements for monitoring and assessment of the alternative's effectiveness, and implementation of interim measures if the remedy is not found to be protective or effective. Groundwater monitoring will be ongoing as part of corrective measures Alternative 1. It is recommended that the existing corrective measures be assessed for protectiveness on an annual basis, and that overall effectiveness be evaluated in 3 to 5 years.

7.5 PUBLIC COMMENT

ARM 16.14.708(6)(d) states that the results of the CMA, and the preferred remedy identified in the CMA must be discussed in a public meeting with interested and affected

parties. This meeting will take place prior to final selection, MDHES approval and implementation of the corrective measure. As previously mentioned, the degree at which the chosen corrective measure addresses community concern can be used as a modifying criteria for alternative selection. The City of Helena believes that Alternative 1 fulfills the project objectives and will also address public concern.

8.0 REFERENCES

EPA, 1994. Integrated Risk Information System (IRIS), computer database updated quarterly, search performed for the January 1, 1994 version.

EPA, 1991. Health Effects Assessment Summary Tables, Annual FY-1991, EPA Office of Emergency and Remedial Response, NTIS No. PB91-921199, January, 1991.

EPA, 1985. Health Effects Assessment Document for Tetrachloroethylene (Perchloroethylene), Final Report, EPA Office of Health and Environmental Assessment, EPA/600/8-82/005F, July 1985.

Hydrometrics, 1991. Hydrogeological Investigation of the City of Helena Landfill.

Hydrometrics, 1993. Helena Landfill Closure Plan.

Hydrometrics, 1994. Helena Landfill Sampling and Analysis Plan.

Montana Department of Health land Environmental Sciences, 1994. Water Quality Bureau Circular WQB 7.

APPENDIX A

SUMMARY OF WATER QUALITY ANALYSES

Sample Type: Irrigation Well

SITE CODE	I-1	I-1	I-1
SAMPLE DATE	04/27/94	08/24/94	11/21/94
SAMPLE TIME	15:00	09:30	13:30
LAB	EL	EL	EL
LAB NUMBER	94-17317	94-40102	94-58166
SAMPLE NUMBER	HL-I1	HL-9408-104	HL-9411-109
-- PHYSICAL PARAMETERS --			
DEPTH TO WATER LEVEL (FEET)		92.22	102.51
PH (FLD)		8.72	8.87
SC (UMHOS/CM AT 25 C) (FLD)		235.0	198.0
WATER TEMPERATURE (C) (FLD)		12.1	9.3
-- VOLATILE ORGANICS --			
1,1,1,2-TETRACHLOROETHANE	<0.001	<0.001	<0.001
1,1,1-TRICHLOROETHANE	<0.001	<0.001	<0.001
1,1,2,2-TETRACHLOROETHANE	<0.001	<0.001	<0.001
1,1,2-TRICHLOROETHANE	<0.001	<0.001	<0.001
1,1-DICHLOROETHANE	<0.001	<0.001	<0.001
1,1-DICHLOROETHENE	<0.001	<0.001	<0.001
1,2-DIBROMOETHANE	<0.001	<0.001	<0.001
1,2-DICHLOROETHANE	<0.001	<0.001	<0.001
1,2-DICHLOROPROPANE	<0.001	<0.001	<0.001
2-HEXANONE	<0.02	<0.02	<0.02
ACETONE	<0.05	<0.05	<0.05
ACRYLONITRILE	<0.02	<0.02	<0.02
BENZENE	<0.001	<0.001	<0.001
BROMOCHLOROMETHANE	<0.001	<0.001	<0.001
BROMODICHLOROMETHANE	<0.001	<0.001	<0.001
BROMOFORM	<0.001	<0.001	<0.001
BROMOMETHANE	<0.001	<0.001	<0.001
CARBON DISULFIDE	<0.001	<0.001	<0.001
CARBON TETRACHLORIDE	<0.001	<0.001	<0.001
CHLOROBENZENE	<0.001	<0.001	<0.001
CHLOROETHANE	<0.001	<0.001	<0.001
CHLOROFORM	<0.001	<0.001	<0.001
CHLOROMETHANE	<0.001	<0.001	<0.001
CIS-1,2-DICHLOROETHENE	<0.001	<0.001	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001
DIBROMOCHLOROMETHANE	<0.001	<0.001	<0.001
DIBROMOMETHANE	<0.001	<0.001	<0.001
DICHLORODIFLUOROMETHANE	<0.001	<0.001	<0.001
DICHLOROFLUOROMETHANE	<0.001		
ETHYLBENZENE	<0.001	<0.001	<0.001
IODOMETHANE	<0.001	<0.001	<0.001
O-XYLENE	<0.001	<0.001	<0.001
METHYL ETHYL KETONE		<0.02	
METHYL ETHYL KETONE	<0.02		<0.02
METHYL ISOBUTL KETONE	<0.02	<0.02	<0.02
METHYLENE CHLORIDE	<0.001	<0.001	<0.001
STYRENE	<0.001	<0.001	<0.001
TETRACHLOROETHENE	<0.001	<0.001	<0.001
TOLUENE	<0.001	<0.001	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001	<0.001	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001
TRICHLOROETHENE	<0.001	<0.001	<0.001
TRICHLOROFLUOROMETHANE	<0.001	<0.001	<0.001
VINYL ACETATE	<0.001	<0.001	<0.001
VINYL CHLORIDE	<0.001	<0.001	<0.001
-- SEMI-VOLATILE EXTRACTABLES --			
1,2,3-TRICHLOROPROPANE	<0.001	<0.001	<0.001
1,2-DIBROMO-3-CHLOROPROPANE	<0.001	<0.001	<0.001
1,2-DICHLOROBENZENE	<0.001	<0.001	<0.001
TRANS-1,4-DICHLORO-2-BUTENE	0.002	<0.002	<0.002

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Irrigation Well

SITE CODE	I-1	I-1	I-1
SAMPLE DATE	04/27/94	08/24/94	11/21/94
SAMPLE TIME	15:00	09:30	13:30
LAB	EL	EL	EL
LAB NUMBER	94-17317	94-40102	94-58166
SAMPLE NUMBER	HL-I1	HL-9408-104	HL-9411-109
-- SEMI-VOLATILE EXTRACTABLES --			
1,4-DICHLOROBENZENE	<0.001	<0.001	<0.001
-- HYDROCARBONS --			
M+P-XYLENE	<0.001	<0.001	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Irrigation Well

SITE CODE	I-2	I-2	I-2
SAMPLE DATE	04/21/94	08/25/94	11/21/94
SAMPLE TIME	08:00	09:15	13:40
LAB	EL	EL	HYDRO
LAB NUMBER	94-16831	94-40380	
REMARKS			NO SAMPLE
SAMPLE NUMBER	HLI2	HL-9408-114	HL-9411-110
-- PHYSICAL PARAMETERS --			
DEPTH TO WATER LEVEL (FEET)		PUMPING	39.56
PH (FLD)		7.67	
SC (UMHOS/CM AT 25 C) (FLD)		63.0	
WATER TEMPERATURE (C) (FLD)		15.4	
-- VOLATILE ORGANICS --			
1,1,1,2-TETRACHLOROETHANE	<0.001	<0.001	
1,1,1-TRICHLOROETHANE	<0.001	<0.001	
1,1,2,2-TETRACHLOROETHANE	<0.001	<0.001	
1,1,2-TRICHLOROETHANE	<0.001	<0.001	
1,1-DICHLOROETHANE	<0.001	<0.001	
1,1-DICHLOROETHENE	<0.001	<0.001	
1,2-DIBROMOETHANE	<0.001	<0.001	
1,2-DICHLOROETHANE	<0.001	<0.001	
1,2-DICHLOROPROPANE	<0.001	<0.001	
2-HEXANONE	<0.02	<0.02	
ACETONE	<0.05	<0.05	
ACRYLONITRILE	<0.02	<0.02	
BENZENE	<0.001	<0.001	
BROMOCHLOROMETHANE	<0.001	<0.001	
BROMODICHLOROMETHANE	<0.001	0.0011	
BROMOFORM	<0.001	<0.001	
BROMOMETHANE	<0.001	<0.001	
CARBON DISULFIDE	<0.001	<0.001	
CARBON TETRACHLORIDE	<0.001	<0.001	
CHLOROBENZENE	<0.001	<0.001	
CHLOROETHANE	<0.001	<0.001	
CHLOROFORM	<0.001	0.043	
CHLOROMETHANE	<0.001	<0.001	
CIS-1,2-DICHLOROETHENE	<0.001	<0.001	
CIS-1,3-DICHLOROPROPENE	<0.001	<0.001	
DIBROMOCHLOROMETHANE	<0.001	<0.001	
DIBROMOMETHANE	<0.001	<0.001	
DICHLORODIFLUOROMETHANE	0.0018	<0.001	
DICHLOROFLUOROMETHANE	0.0015		
ETHYLBENZENE	<0.001	<0.001	
IODOMETHANE	<0.001	<0.001	
O-XYLENE	<0.001	<0.001	
METHYL ETHYL KETONE		<0.02	
METHYL ETHYL KETONE	<0.02		
METHYL ISOBUTL KETONE	<0.02	<0.02	
METHYLENE CHLORIDE	<0.001	<0.001	
STYRENE	<0.001	<0.001	
TETRACHLOROETHENE	0.0013	<0.001	
TOLUENE	<0.001	0.0013	
TRANS-1,2-DICHLOROETHENE	<0.001	<0.001	
TRANS-1,3-DICHLOROPROPENE	<0.001	<0.001	
TRICHLOROETHENE	<0.001	<0.001	
TRICHLOROFLUOROMETHANE	<0.001	<0.001	
VINYL ACETATE	<0.001	<0.001	
VINYL CHLORIDE	<0.001	<0.001	
-- SEMI-VOLATILE EXTRACTABLES --			
1,2,3-TRICHLOROPROPANE	<0.001	<0.001	
1,2-DIBROMO-3-CHLOROPROPANE	<0.001	<0.001	
1,2-DICHLOROBENZENE	<0.001	<0.001	

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Irrigation Well

SITE CODE	I-2	I-2	I-2
SAMPLE DATE	04/21/94	08/25/94	11/21/94
SAMPLE TIME	08:00	09:15	13:40
LAB	EL	EL	HYDRO
LAB NUMBER	94-16831	94-40380	
REMARKS			NO SAMPLE
SAMPLE NUMBER	HLI2	HL-9408-114	HL-9411-110
-- SEMI-VOLATILE EXTRACTABLES --			
TRANS-1,4-DICHLORO-2-BUTENE	<0.002	<0.002	
1,4-DICHLOROBENZENE	<0.001	<0.001	
-- HYDROCARBONS --			
M+P-XYLENE	<0.001	<0.001	

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Irrigation Well

SITE CODE	I-3	I-3	I-3	I-3
SAMPLE DATE	05/08/90	04/21/94	08/25/94	11/21/94
SAMPLE TIME	11:40	08:15	09:00	13:45
LAB	EL	EL	EL	HYDRO
LAB NUMBER	90-12196	94-16832	94-40379	
REMARKS				NO SAMPLE
SAMPLE NUMBER	HL-9005-116	HLI3	HL-9408-108	HL-9411-111
-- PHYSICAL PARAMETERS --				
DEPTH TO WATER LEVEL (FEET)			PUMPING	34.25
PH (FLD)			7.3	
SC (UMHOS/CM AT 25 C) (FLD)			845.0	
WATER TEMPERATURE (C) (FLD)			10.4	
-- VOLATILE ORGANICS --				
1,1,1,2-TETRACHLOROETHANE	<0.001	<0.001	<0.001	
1,1,1-TRICHLOROETHANE	0.0026	<0.001	0.0017	
1,1,2,2-TETRACHLOROETHANE	<0.001	<0.001	<0.001	
1,1,2-TRICHLOROETHANE	<0.001	<0.001	<0.001	
1,1-DICHLOROETHANE	0.0017	<0.001	<0.001	
1,1-DICHLOROETHENE	<0.0005	<0.001	<0.001	
1,1-DICHLOROPROPENE	<0.001			
1,2-DIBROMOETHANE	<0.001	<0.001	<0.001	
1,2-DICHLOROETHANE	<0.0005	<0.001	<0.001	
1,2-DICHLOROPROPANE	<0.001	<0.001	<0.001	
2,2-DICHLOROPROPANE	<0.001			
2-CHLOROTOLUENE	<0.001			
2-HEXANONE		<0.02	<0.02	
4-CHLOROTOLUENE	<0.001			
ACETONE		<0.05	<0.05	
ACRYLONITRILE		<0.02	<0.02	
BENZENE	<0.0005	<0.001	<0.001	
BROMOBENZENE	0.001			
BROMOCHLOROMETHANE	<0.001	<0.001	<0.001	
BROMODICHLOROMETHANE	<0.001	<0.001	<0.001	
BROMOFORM	<0.001	<0.001	<0.001	
BROMOMETHANE	<0.001	<0.001	<0.001	
CARBON DISULFIDE		<0.001	<0.001	
CARBON TETRACHLORIDE	<0.0005	<0.001	<0.001	
CHLOROBENZENE	<0.001	<0.001	<0.001	
CHLOROETHANE	<0.001	<0.001	<0.001	
CHLOROFORM	0.0038	0.0026	0.0013	
CHLOROMETHANE	0.001	<0.001	<0.001	
CIS-1,2-DICHLOROETHENE	0.0011	<0.001	<0.001	
CIS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001	
DIBROMOCHLOROMETHANE	<0.001	<0.001	<0.001	
DIBROMOMETHANE	<0.001	<0.001	<0.001	
DICHLORODIFLUOROMETHANE	0.0052	0.003	0.0012	
DICHLOROFLUOROMETHANE		0.003		
ETHYLBENZENE	<0.001	<0.001	<0.001	
IODOMETHANE		<0.001	<0.001	
M-XYLENE	<0.001			
O-XYLENE	<0.001	<0.001	<0.001	
P-XYLENE	<0.001			
METHYL ETHYL KETONE			<0.02	
METHYL ETHYL KETONE		<0.02		
METHYL ISOBUTL KETONE		<0.02	<0.02	
METHYLENE CHLORIDE	0.0011	<0.001	0.0012	
STYRENE	<0.001	<0.001	<0.001	
TETRACHLOROETHENE	0.007	0.0042	0.0042	
TOLUENE	<0.001	<0.001	<0.001	
TRANS-1,2-DICHLOROETHENE	<0.001	<0.001	<0.001	
TRANS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001	
TRICHLOROETHENE	0.0011	<0.001	<0.001	
TRICHLOROFLUOROMETHANE	<0.001	<0.001	0.0015	

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Irrigation Well

SITE CODE	I-3	I-3	I-3	I-3
SAMPLE DATE	05/08/90	04/21/94	08/25/94	11/21/94
SAMPLE TIME	11:40	08:15	09:00	13:45
LAB	EL	EL	EL	HYDRO
LAB NUMBER	90-12196	94-16832	94-40379	
REMARKS				NO SAMPLE
SAMPLE NUMBER	HL-9005-116	HLI3	HL-9408-108	HL-9411-111
-- VOLATILE ORGANICS --				
VINYL ACETATE		<0.001	<0.001	
VINYL CHLORIDE	<0.0005	<0.001	<0.001	
-- SEMI-VOLATILE EXTRACTABLES --				
1,2,3-TRICHLOROBENZENE	<0.001			
1,2,3-TRICHLOROPROPANE	<0.001	<0.001	<0.001	
1,2,4-TRICHLOROBENZENE	<0.001			
1,2,4-TRIMETHYLBENZENE	<0.001			
1,2-DIBROMO-3-CHLOROPROPANE	<0.001	<0.001	<0.001	
1,2-DICHLOROBENZENE	<0.001	<0.001	<0.001	
1,3,5-TRIMETHYLBENZENE	<0.001			
1,3-DICHLOROBENZENE	<0.001			
1,3-DICHLOROPROPANE	<0.001			
TRANS-1,4-DICHLORO-2-BUTENE		<0.002	<0.002	
1,4-DICHLOROBENZENE	<0.0005	<0.001	<0.001	
DICHLOROMONOFLUOROMETHANE	0.0039			
HEXACHLOROBUTADIENE	<0.001			
ISOPROPYLBENZENE	<0.001			
N-BUTYLBENZENE	<0.001			
N-PROPYLBENZENE	<0.001			
NAPHTHALENE	<0.001			
P-ISOPROPYLTOLUENE	<0.001			
SEC-BUTYLBENZENE	<0.001			
TERT-BUTYLBENZENE	<0.001			
-- HYDROCARBONS --				
M+P-XYLENE		<0.001	<0.001	

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Irrigation Well

SITE CODE	INF.GALLERY	INF.GALLERY	INF.GALLERY
SAMPLE DATE	04/21/94	08/25/94	11/21/94
SAMPLE TIME	08:40	10:00	09:15
LAB	EL	EL	EL
LAB NUMBER	94-16833	94-40381	94-58167
SAMPLE NUMBER	HL-IF1	HL-9408-113	HL-9411-112
-- PHYSICAL PARAMETERS --			
DEPTH TO WATER LEVEL (FEET)		11.24	6.33
PH (FLD)		7.45	7.57
SC (UMHOS/CM AT 25 C) (FLD)		584.0	509.0
WATER TEMPERATURE (C) (FLD)		13.4	8.9
-- VOLATILE ORGANICS --			
1,1,1,2-TETRACHLOROETHANE	<0.001	<0.001	<0.001
1,1,1-TRICHLOROETHANE	<0.001	<0.001	<0.001
1,1,2,2-TETRACHLOROETHANE	<0.001	<0.001	<0.001
1,1,2-TRICHLOROETHANE	<0.001	<0.001	<0.001
1,1-DICHLOROETHANE	<0.001	<0.001	<0.001
1,1-DICHLOROETHENE	<0.001	<0.001	<0.001
1,2-DIBROMOETHANE	<0.001	<0.001	<0.001
1,2-DICHLOROETHANE	<0.001	<0.001	<0.001
1,2-DICHLOROPROPANE	<0.001	<0.001	<0.001
2-HEXANONE	<0.02	<0.02	<0.02
ACETONE	<0.05	<0.05	<0.05
ACRYLONITRILE	<0.02	<0.02	<0.02
BENZENE	<0.001	<0.001	<0.001
BROMOCHLOROMETHANE	<0.001	<0.001	<0.001
BROMODICHLOROMETHANE	<0.001	<0.001	<0.001
BROMOFORM	<0.001	<0.001	<0.001
BROMOMETHANE	<0.001	<0.001	<0.001
CARBON DISULFIDE	<0.001	<0.001	<0.001
CARBON TETRACHLORIDE	<0.001	<0.001	<0.001
CHLOROBENZENE	<0.001	<0.001	<0.001
CHLOROETHANE	<0.001	<0.001	<0.001
CHLOROFORM	<0.001	<0.001	<0.001
CHLOROMETHANE	<0.001	<0.001	<0.001
CIS-1,2-DICHLOROETHENE	<0.001	<0.001	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001
DIBROMOCHLOROMETHANE	<0.001	<0.001	<0.001
DIBROMOMETHANE	<0.001	<0.001	<0.001
DICHLORODIFLUOROMETHANE	<0.001	<0.001	<0.001
DICHLOROFLUOROMETHANE	<0.001		
ETHYLBENZENE	<0.001	<0.001	<0.001
IODOMETHANE	<0.001	<0.001	<0.001
O-XYLENE	<0.001	<0.001	<0.001
METHYL ETHYL KETONE		<0.02	
METHYL ETHYL KETONE	<0.02		<0.02
METHYL ISOBUTL KETONE	<0.02	<0.02	<0.02
METHYLENE CHLORIDE	<0.001	<0.001	<0.001
STYRENE	<0.001	<0.001	<0.001
TETRACHLOROETHENE	<0.001	<0.001	<0.001
TOLUENE	<0.001	<0.001	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001	<0.001	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001
TRICHLOROETHENE	<0.001	<0.001	<0.001
TRICHLOROFLUOROMETHANE	<0.001	<0.001	<0.001
VINYL ACETATE	<0.001	<0.001	<0.001
VINYL CHLORIDE	<0.001	<0.001	<0.001
-- SEMI-VOLATILE EXTRACTABLES --			
1,2,3-TRICHLOROPROPANE	<0.001	<0.001	<0.001
1,2-DIBROMO-3-CHLOROPROPANE	<0.001	<0.001	<0.001
1,2-DICHLOROBENZENE	<0.001	<0.001	<0.001
TRANS-1,4-DICHLORO-2-BUTENE	<0.002	<0.002	<0.002

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Irrigation Well

SITE CODE	INF.GALLERY	INF.GALLERY	INF.GALLERY
SAMPLE DATE	04/21/94	08/25/94	11/21/94
SAMPLE TIME	08:40	10:00	09:15
LAB	EL	EL	EL
LAB NUMBER	94-16833	94-40381	94-58167
SAMPLE NUMBER	HL-IF1	HL-9408-113	HL-9411-112
-- SEMI-VOLATILE EXTRACTABLES --			
1,4-DICHLOROBENZENE	<0.001	<0.001	<0.001
-- HYDROCARBONS --			
M+P-XYLENE	<0.001	<0.001	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	82-2
SAMPLE DATE	11/11/89
SAMPLE TIME	17:15
LAB	EL
LAB NUMBER	89-20181
SAMPLE NUMBER	HL-8911-002
-- PHYSICAL PARAMETERS --	
DEPTH TO WATER LEVEL (FEET)	14.81
-- VOLATILE ORGANICS --	
1,1,1,2-TETRACHLOROETHANE	<0.001
1,1,1-TRICHLOROETHANE	<0.0005
1,1,2,2-TETRACHLOROETHANE	<0.001
1,1,2-TRICHLOROETHANE	<0.001
1,1-DICHLOROETHANE	<0.001
1,1-DICHLOROETHENE	<0.0005
1,1-DICHLOROPROPENE	<0.001
1,2-DIBROMOETHANE	<0.001
1,2-DICHLOROETHANE	<0.0005
1,2-DICHLOROPROPANE	<0.001
2,2-DICHLOROPROPANE	<0.001
2-CHLOROTOLUENE	<0.001
4-CHLOROTOLUENE	<0.001
BENZENE	<0.0005
BROMOBENZENE	<0.001
BROMOCHLOROMETHANE	<0.001
BROMODICHLOROMETHANE	<0.001
BROMOFORM	<0.001
BROMOMETHANE	<0.001
CARBON TETRACHLORIDE	<0.0005
CHLOROBENZENE	<0.001
CHLOROETHANE	<0.001
CHLOROFORM	<0.001
CHLOROMETHANE	<0.001
CIS-1,2-DICHLOROETHENE	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001
DIBROMOCHLOROMETHANE	<0.001
DIBROMOMETHANE	<0.001
DICHLORODIFLUOROMETHANE	<0.001
ETHYLBENZENE	<0.001
M-XYLENE	<0.001
O-XYLENE	<0.001
P-XYLENE	<0.001
METHYLENE CHLORIDE	<0.001
STYRENE	<0.001
TETRACHLOROETHENE	<0.0005
TOLUENE	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001
TRICHLOROETHENE	<0.0005
TRICHLOROFLUOROMETHANE	<0.001
VINYL CHLORIDE	<0.0005
-- SEMI-VOLATILE EXTRACTABLES --	
1,2,3-TRICHLOROBENZENE	<0.001
1,2,3-TRICHLOROPROPANE	<0.001
1,2,4-TRICHLOROBENZENE	<0.001
1,2,4-TRIMETHYLBENZENE	<0.001
1,2-DIBROMO-3-CHLOROPROPANE	<0.001
1,2-DICHLOROBENZENE	<0.001
1,3,5-TRIMETHYLBENZENE	<0.001
1,3-DICHLOROBENZENE	<0.001
1,3-DICHLOROPROPANE	<0.001
1,4-DICHLOROBENZENE	<0.0005

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	82-2
SAMPLE DATE	11/11/89
SAMPLE TIME	17:15
LAB	EL
LAB NUMBER	89-20181
SAMPLE NUMBER	HL-8911-002
-- SEMI-VOLATILE EXTRACTABLES --	
HEXACHLOROBUTADIENE	<0.001
ISOPROPYLBENZENE	<0.001
N-BUTYLBENZENE	<0.001
N-PROPYLBENZENE	<0.001
NAPHTHALENE	<0.001
P-ISOPROPYLTOLUENE	<0.001
SEC-BUTYLBENZENE	<0.001
TERT-BUTYLBENZENE	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	82-3
SAMPLE DATE	11/13/89
SAMPLE TIME	11:45
LAB	HYDRO
LAB NUMBER	
SAMPLE NUMBER	HL-8911-904

-- PHYSICAL PARAMETERS --

DEPTH TO WATER LEVEL (FEET)	58.46

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

	SITE CODE	82-4	82-4
	SAMPLE DATE	11/11/89	05/11/90
	SAMPLE TIME	15:30	15:30
	LAB	EL	EL
	LAB NUMBER	89-20180	90-12199
	SAMPLE NUMBER	HL-8911-001	HL-9005-122
-- PHYSICAL PARAMETERS --			
	DEPTH TO WATER LEVEL (FEET)	59.05	
-- VOLATILE ORGANICS --			
	1,1,1,2-TETRACHLOROETHANE	<0.001	
	1,1,1-TRICHLOROETHANE	0.01	
	1,1,2,2-TETRACHLOROETHANE	<0.001	
	1,1,2-TRICHLOROETHANE	<0.001	
	1,1-DICHLOROETHANE	0.0028	
	1,1-DICHLOROETHENE	<0.0005	
	1,1-DICHLOROPROPENE	<0.001	
	1,2-DIBROMOETHANE	<0.001	
	1,2-DICHLOROETHANE	<0.0005	
	1,2-DICHLOROPROPANE	<0.001	
	2,2-DICHLOROPROPANE	<0.001	
	2-CHLOROTOLUENE	<0.001	
	4-CHLOROTOLUENE	<0.001	
	BENZENE	<0.0005	
	BROMOBENZENE	<0.001	
	BROMOCHLOROMETHANE	<0.001	
	BROMODICHLOROMETHANE	<0.001	
	BROMOFORM	<0.001	
	BROMOMETHANE	<0.001	
	CARBON TETRACHLORIDE	<0.0005	
	CHLOROBENZENE	<0.001	
	CHLOROETHANE	<0.001	
	CHLOROFORM	<0.001	
	CHLOROMETHANE	<0.001	
	CIS-1,2-DICHLOROETHENE	<0.001	
	CIS-1,3-DICHLOROPROPENE	<0.001	
	DIBROMOCHLOROMETHANE	<0.001	
	DIBROMOMETHANE	<0.001	
	DICHLORODIFLUOROMETHANE	0.069	
	ETHYLBENZENE	<0.001	
	M-XYLENE	<0.001	
	O-XYLENE	<0.001	
	P-XYLENE	<0.001	
	METHYLENE CHLORIDE	0.0077	
	STYRENE	<0.001	
	TETRACHLOROETHENE	0.0049	
	TOLUENE	<0.001	
	TRANS-1,2-DICHLOROETHENE	<0.001	
	TRANS-1,3-DICHLOROPROPENE	<0.001	
	TRICHLOROETHENE	0.0029	
	TRICHLOROFLUOROMETHANE	0.042	
	VINYL CHLORIDE	<0.0005	
-- SEMI-VOLATILE EXTRACTABLES --			
	1,2,3-TRICHLOROBENZENE	<0.001	
	1,2,3-TRICHLOROPROPANE	<0.001	
	1,2,4-TRICHLOROBENZENE	<0.001	<0.01
	1,2,4-TRIMETHYLBENZENE	<0.001	
	1,2-DIBROMO-3-CHLOROPROPANE	<0.001	
	1,2-DICHLOROBENZENE	<0.001	<0.01
	1,3,5-TRIMETHYLBENZENE	<0.001	
	1,3-DICHLOROBENZENE	<0.001	<0.01
	1,3-DICHLOROPROPANE	<0.001	
	1,4-DICHLOROBENZENE	<0.0005	<0.01

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	82-4	82-4
SAMPLE DATE	11/11/89	05/11/90
SAMPLE TIME	15:30	15:30
LAB	EL	EL
LAB NUMBER	89-20180	90-12199
SAMPLE NUMBER	HL-8911-001	HL-9005-122
-- SEMI-VOLATILE EXTRACTABLES --		
2-METHYL-4 6-DINITROPHENOL		<0.05
2,4,6-TRICHLOROPHENOL		<0.01
2,4-DICHLOROPHENOL		<0.01
2,4-DIMETHYLPHENOL		<0.01
2,4-DINITROPHENOL		<0.05
2,4-DINITROTOLUENE		<0.01
2,6-DINITROTOLUENE		<0.01
2-CHLORONAPHTHALENE		<0.01
2-CHLOROPHENOL		<0.01
2-NITROPHENOL		<0.01
3,3-DICHLOROBENZIDINE		<0.01
4-BROMOPHENYL PHENYL ETHER		<0.01
4-CHLORO-3-METHYLPHENOL		<0.01
4-CHLOROPHENYL PHENYL ETHER		<0.01
4-NITROPHENOL		<0.05
ACENAPHTHENE		<0.01
ACENAPHTHYLENE		<0.01
ANTHRACENE		<0.01
1,2-DIPHENYLHYDRAZINE (AZOBENZENE)		<0.01
BENZIDINE		<0.01
BENZO (A) ANTHRACENE		<0.01
BENZO (A) PYRENE		<0.01
BENZO (B) FLUORANTHENE		<0.01
BENZO (GHI) PERYLENE		<0.01
BENZO (K) FLUORANTHENE		<0.01
BIS (2-CHLOROETHOXY) METHANE		<0.01
BIS (2-CHLOROETHYL) ETHER		<0.01
BIS (2-CHLOROISOPROPYL) ETHER		<0.01
BIS (2-ETHYLHEXYL) PHTHALATE		<0.01
BUTYL BENZYL PHTHALATE		<0.01
CHRYSENE		<0.01
DI-N-BUTYLPHTHALATE		<0.01
DI-N-OCTYLPHTHALATE		<0.01
DIBENZO (A,H) ANTHRACENE		<0.01
DICHLOROMONOFLUOROMETHANE	0.031	
DIETHYLPHTHALATE		<0.01
DIMETHYLPHTHALATE		<0.01
FLUORANTHENE		<0.01
FLUORENE		<0.01
HEXACHLOROBENZENE		<0.01
HEXACHLOROBUTADIENE	<0.001	<0.01
HEXACHLOROETHANE		<0.01
INDENO (1,2,3-CD) PYRENE		<0.01
ISOPHORONE		<0.01
ISOPROPYLBENZENE	<0.001	
N-BUTYLBENZENE	<0.001	
N-NITROSO-DI-N-PROPYLAMINE		<0.01
N-NITROSOPHENYLAMINE		<0.01
N-PROPYLBENZENE	<0.001	
NAPHTHALENE	<0.001	<0.01
NITROBENZENE		<0.01
P-ISOPROPYLTOLUENE	<0.001	
PENTACHLOROPHENOL		<0.05
PHENANTHRENE		<0.01
PHENOL		<0.01
PYRENE		<0.01
SEC-BUTYLBENZENE	<0.001	

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	82-4	82-4
SAMPLE DATE	11/11/89	05/11/90
SAMPLE TIME	15:30	15:30
LAB	EL	EL
LAB NUMBER	89-20180	90-12199
SAMPLE NUMBER	HL-8911-001	HL-9005-122
-- SEMI-VOLATILE EXTRACTABLES --		
TERT-BUTYLBENZENE	<0.001	

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	83-5
SAMPLE DATE	11/13/89
SAMPLE TIME	11:10
LAB	HYDRO
LAB NUMBER	
SAMPLE NUMBER	HL-8911-901

-- PHYSICAL PARAMETERS --	
DEPTH TO WATER LEVEL (FEET)	11.91

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	83-6	83-6	83-6	83-6	83-6	83-6	83-6
SAMPLE DATE	11/13/89	04/05/91	01/31/92	05/19/92	11/16/92	05/22/93	12/15/93
SAMPLE TIME	11:00	14:00	09:45	16:30	12:00	13:00	09:30
LAB	HYDRO	EL	EL	EL	EL	EL	EL
LAB NUMBER		91-12769	92-5001	92-19274	92-49141	93-20284	93-59620
SAMPLE NUMBER	HL-8911-900	HL-9104-106	HL-9201-111	HL-9205-103	HL-9211-100	HL-9305-100	HL-9312-100
-- PHYSICAL PARAMETERS --							
DEPTH TO WATER LEVEL (FEET)	12.97	12.14	12.31	12.79	12.04	11.49	9.65
PH (FLD)				7.36	7.11	7.13	6.97
PH		7.5	7.8	7.6	7.4	7.2	7.3
SC (UMHOS/CM AT 25 C)			629.0	667.0	714.0	710.0	691.0
SC (UMHOS/CM AT 25 C) (FLD)				680.0	729.0	661.0	732.0
TDS (MEASURED AT 180 C)		511.0	421.0	425.0	463.0	459.0	
TOTAL SUSPENDED SOLIDS			420.0	10.0	1670.0	1490.0	
WATER TEMPERATURE (C) (FLD)			11.5	13.2	11.1	12.9	4.0
-- MAJOR CONSTITUENTS --							
CALCIUM (CA) DIS		114.0	89.0	94.0	94.0	96.0	
MAGNESIUM (MG) DIS		31.0	25.0	27.0	25.0	26.0	
SODIUM (NA) DIS		23.0	20.0	22.0	21.0	21.0	
POTASSIUM (K) DIS		5.0	3.0	4.0	4.0	3.0	
TOTAL ALKALINITY AS CACO3		255.0	226.0	256.0	297.0	253.0	
BICARBONATE (HCO3)		311.0	276.0	313.0	362.0	309.0	
CARBONATE AS CO3		0.0	0.0	0.0	0.0	0.0	
SULFATE (SO4)		109.0	86.0	89.0	80.0	75.0	82.0
CHLORIDE (CL)		32.0	26.0	28.0	23.0	23.0	22.0
-- NUTRIENTS --							
AMMONIA (NH3 AS N)			<0.1	<0.1	<0.1	<0.1	
NITRATE (NO3-N)			4.27	4.02	3.82	3.76	4.65
NITRATE + NITRITE AS N		8.91					
TOTAL NITROGEN AS N		<0.1					
-- METALS & MINOR CONSTITUENTS --							
ANTIMONY (SB) DIS							<0.05
ARSENIC (AS) DIS		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
BARIUM (BA) DIS		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BERYLLIUM (BE) DIS							<0.001
CADMIUM (CD) DIS		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CHROMIUM (CR) DIS		<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
COBALT (CO) DIS							<0.01
COPPER (CU) DIS							<0.01
IRON (FE) DIS		<0.03	0.09	0.1	<0.03	0.07	0.1
LEAD (PB) DIS		<0.01	<0.01	<0.01	0.02	<0.01	<0.01
MANGANESE (MN) DIS		0.04	0.05	<0.02	0.13	0.07	
MERCURY (HG) DIS		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
NICKEL (NI) DIS							<0.01
SELENIUM (SE) DIS		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
SILVER (AG) DIS		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
THALLIUM (TL) DIS							<0.1
VANADIUM (V) DIS							<0.1
ZINC (ZN) DIS							<0.01
-- VOLATILE ORGANICS --							
1,1,1,2-TETRACHLOROETHANE							<0.001
1,1,1-TRICHLOROETHANE		0.0029	0.0017	0.0014	0.0012	<0.001	<0.001
1,1,2,2-TETRACHLOROETHANE		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,2-TRICHLOROETHANE		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-DICHLOROETHANE		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-DICHLOROETHENE		<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001
1,2-DIBROMOETHANE							<0.001
1,2-DICHLOROETHANE		<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001
1,2-DICHLOROPROPANE							<0.001
2-BUTANONE (METHYL-ETHYL-KETONE)		<0.01					

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TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	83-6	83-6	83-6	83-6	83-6	83-6	83-6
SAMPLE DATE	11/13/89	04/05/91	01/31/92	05/19/92	11/16/92	05/22/93	12/15/93
SAMPLE TIME	11:00	14:00	09:45	16:30	12:00	13:00	09:30
LAB	HYDRO	EL	EL	EL	EL	EL	EL
LAB NUMBER		91-12769	92-5001	92-19274	92-49141	93-20284	93-59620
SAMPLE NUMBER	HL-8911-900	HL-9104-106	HL-9201-111	HL-9205-103	HL-9211-100	HL-9305-100	HL-9312-100
-- VOLATILE ORGANICS --							
2-CHLOROETHYL VINYL ETHER		<0.01	<0.01	<0.01	<0.001	<0.001	
2-HEXANONE		<0.01					<0.02
4-BROMOFLUOROBENZENE		0.01	<0.01	<0.01	<0.01	<0.01	
4-METHYL-2-PENTANONE		<0.01					
ACETONE		<0.01					<0.02
ACROLEIN		<0.01					
ACRYLONITRILE		<0.01					<0.02
BENZENE		<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001
BROMOCHLOROMETHANE		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMODICHLOROMETHANE		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMOFORM		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMOMETHANE		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CARBON DISULFIDE		<0.01					<0.001
CARBON TETRACHLORIDE		<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001
CHLOROBENZENE		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROETHANE		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROFORM		0.0032	0.003	0.0012	0.0017	0.0027	0.0071
CHLOROMETHANE		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CIS-1,2-DICHLOROETHENE							<0.001
CIS-1,3-DICHLOROPROPENE		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DIBROMOCHLOROMETHANE		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DIBROMOMETHANE		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DICHLORODIFLUOROMETHANE		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
ETHANOL		<0.01					
ETHYL METHACRYLATE		<0.01	<0.01	<0.01	<0.001	<0.001	
ETHYLBENZENE		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
IODOMETHANE		<0.01	<0.01	<0.01	<0.001	<0.001	<0.001
TOTAL XYLENE		<0.001	<0.001	<0.001	<0.001	<0.001	
M-P XYLENE							<0.001
O-XYLENE							<0.001
METHYL ETHYL KETONE							<0.02
METHYL ISOBUTL KETONE							<0.02
METHYLENE CHLORIDE		<0.001	0.0036	<0.001	<0.001	0.0012	<0.001
STYRENE		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TETRACHLOROETHENE		<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001
TOLUENE		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRANS-1,2-DICHLOROETHENE		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRANS-1,3-DICHLOROPROPENE		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRICHLOROETHENE		<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001
TRICHLOROFLUOROMETHANE		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
VINYL ACETATE		<0.01	<0.01	<0.01	<0.02	<0.001	<0.001
VINYL CHLORIDE		<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001
-- SEMI-VOLATILE EXTRACTABLES --							
1,2,3-TRICHLOROPROPANE		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-DIBROMO-3-CHLOROPROPANE							<0.001
1,2-DICHLOROBENZENE							<0.001
TRANS-1,4-DICHLORO-2-BUTENE							<0.002
1,4-DICHLORO-2-BUTENE		<0.01					
1,4-DICHLOROBENZENE							<0.001
1,4-DIFLUOROBENZENE		<0.01	<0.01	<0.01	<0.001	<0.001	
NAPHTHALENE							<0.001
-- HYDROCARBONS --							
TOTAL ORGANIC CARBON		<2.0					
-- OTHER PARAMETERS --							
CYANIDE (CN) TOT		<0.005	<0.005	<0.005	<0.005	<0.005	0.007

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Sample Type: Monitoring Wells

SITE CODE	83-6	83-6	83-6	83-6	83-6	83-6	83-6
SAMPLE DATE	11/13/89	04/05/91	01/31/92	05/19/92	11/16/92	05/22/93	12/15/93
SAMPLE TIME	11:00	14:00	09:45	16:30	12:00	13:00	09:30
LAB	HYDRO	EL	EL	EL	EL	EL	EL
LAB NUMBER		91-12769	92-5001	92-19274	92-49141	93-20284	93-59620
SAMPLE NUMBER	HL-8911-900	HL-9104-106	HL-9201-111	HL-9205-103	HL-9211-100	HL-9305-100	HL-9312-100
-- OTHER PARAMETERS --							
CHEMICAL OXYGEN DEMAND		<1.0	<1.0	<1.0	10.0	<1.0	<1.0

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TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	83-6	83-6
SAMPLE DATE	04/07/94	11/18/94
SAMPLE TIME	18:20	12:00
LAB	EL	EL
LAB NUMBER	94-13571	94-58154
SAMPLE NUMBER	HL-9404-100	HL-9411-100
-- PHYSICAL PARAMETERS --		
DEPTH TO WATER LEVEL (FEET)	9.81	11.07
PH (FLD)	7.61	7.4
PH		7.2
SC (UMHOS/CM AT 25 C)		715.0
SC (UMHOS/CM AT 25 C) (FLD)	626.0	707.0
WATER TEMPERATURE (C) (FLD)	9.1	9.1
-- MAJOR CONSTITUENTS --		
SULFATE (SO4)		88.0
CHLORIDE (CL)		22.0
-- NUTRIENTS --		
NITRATE + NITRITE AS N		7.33
-- METALS & MINOR CONSTITUENTS --		
ANTIMONY (SB) DIS	<0.05	<0.05
ARSENIC (AS) DIS	<0.005	<0.005
BARIUM (BA) DIS	<0.1	<0.1
BERYLLIUM (BE) DIS	<0.001	<0.001
CADMIUM (CD) DIS	<0.001	<0.001
CHROMIUM (CR) DIS	<0.01	<0.01
COBALT (CO) DIS	<0.01	<0.01
COPPER (CU) DIS	<0.01	<0.01
IRON (FE) DIS		0.09
LEAD (PB) DIS	<0.01	<0.01
MERCURY (HG) DIS	<0.001	<0.001
NICKEL (NI) DIS	<0.01	<0.01
SELENIUM (SE) DIS	<0.005	<0.005
SILVER (AG) DIS	<0.005	<0.005
THALLIUM (TL) DIS	<0.1	<0.1
TIN (SN) DIS	<0.1	
VANADIUM (V) DIS	<0.1	<0.1
ZINC (ZN) DIS	0.03	<0.01
-- VOLATILE ORGANICS --		
ACETONITRILE METHYLCYANIDE	<0.02	
ALLYLCHLORIDE 3-CHLORO-1-PROPENE	<0.001	
1,1,1,2-TETRACHLOROETHANE	<0.001	<0.001
1,1,1-TRICHLOROETHANE	<0.001	<0.001
1,1,2,2-TETRACHLOROETHANE	<0.001	<0.001
1,1,2-TRICHLOROETHANE	<0.001	<0.001
1,1-DICHLOROETHANE	<0.001	<0.001
1,1-DICHLOROETHENE	<0.001	<0.001
1,1-DICHLOROPROPENE	<0.001	
1,2-DIBROMOETHANE	<0.001	<0.001
1,2-DICHLOROETHANE	<0.001	<0.001
1,2-DICHLOROPROPANE	<0.001	<0.001
2,2-DICHLOROPROPANE	<0.001	
2-HEXANONE	<0.02	<0.02
ACETONE	<0.05	<0.05
ACROLEIN	<0.02	
ACRYLONITRILE	<0.02	<0.02
BENZENE	<0.001	<0.001
BROMOCHLOROMETHANE	<0.001	<0.001
BROMODICHLOROMETHANE	<0.001	<0.001
BROMOFORM	<0.001	<0.001
BROMOMETHANE	<0.001	<0.001

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TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	83-6	83-6
SAMPLE DATE	04/07/94	11/18/94
SAMPLE TIME	18:20	12:00
LAB	EL	EL
LAB NUMBER	94-13571	94-58154
SAMPLE NUMBER	HL-9404-100	HL-9411-100
-- VOLATILE ORGANICS --		
CARBON DISULFIDE	<0.001	<0.001
CARBON TETRACHLORIDE	<0.001	<0.001
CHLOROBENZENE	<0.001	<0.001
CHLOROETHANE	<0.001	<0.001
CHLOROFORM	0.014	<0.001
CHLOROMETHANE	<0.001	<0.001
CHLOROPRENE 2-CHLORO-1,3-BUTADIENE	<0.001	
CIS-1,2-DICHLOROETHENE	<0.001	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001	<0.001
DIBROMOCHLOROMETHANE	<0.001	<0.001
DIBROMOMETHANE	<0.001	<0.001
DICHLORODIFLUOROMETHANE	<0.001	<0.001
ETHYL METHACRYLATE	<0.001	
ETHYLBENZENE	<0.001	<0.001
IODOMETHANE	<0.001	<0.001
ISOBUTANOL	<0.05	
O-XYLENE	<0.001	<0.001
METHACRYLONITRILE	<0.02	
METHYL ETHYL KETONE	<0.02	
METHYL ETHYL KETONE		<0.02
METHYL ISOBUTL KETONE	<0.02	<0.02
METHYL METHACRYLATE	<0.002	
METHYLENE CHLORIDE	<0.001	<0.001
PROPIONITRILE ETHYLCYANIDE	<0.02	
STYRENE	<0.001	<0.001
TETRACHLOROETHENE	<0.001	<0.001
TOLUENE	<0.001	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001	<0.001
TRICHLOROETHENE	<0.001	<0.001
TRICHLOROFLUOROMETHANE	<0.001	<0.001
VINYL ACETATE	<0.001	<0.001
VINYL CHLORIDE	<0.001	<0.001
PICLORAM	<0.0005	
-- SEMI-VOLATILE EXTRACTABLES --		
ALPHA-CHLORDANE	<0.00005	
1,4-BENZENEDIAMINE	ND	
CHLOROBENZILATE	<0.01	
1,2,3-TRICHLOROPROPANE	<0.001	<0.001
1,2,4,5-TETRACHLOROBENZENE	<0.01	
1,2,4-TRICHLOROBENZENE	<0.001	
1,2-DIBROMO-3-CHLOROPROPANE	<0.001	<0.001
1,2-DICHLOROBENZENE	<0.001	<0.001
1,3,5-TRINITROBENZENE	<0.01	
1,3-DICHLOROBENZENE	<0.001	
1,3-DICHLOROPROPANE	<0.001	
1,3-DINITROBENZENE	<0.01	
TRANS-1,4-DICHLORO-2-BUTENE	<0.002	<0.002
1,4-DICHLOROBENZENE	<0.001	<0.001
METHAPYRILENE	ND	
1-METHYLNAPHTHALENE	<0.01	
1-NAPHTHYLAMINE	<0.01	
2,3,4,6-TETRACHLOROPHENOL	<0.01	
2,4,5-TRICHLOROPHENOL	<0.01	
2,4,6-TRICHLOROPHENOL	<0.01	
2,4-DICHLOROPHENOL	<0.01	

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Sample Type: Monitoring Wells

SITE CODE	83-6	83-6
SAMPLE DATE	04/07/94	11/18/94
SAMPLE TIME	18:20	12:00
LAB	EL	EL
LAB NUMBER	94-13571	94-58154
SAMPLE NUMBER	HL-9404-100	HL-9411-100
-- SEMI-VOLATILE EXTRACTABLES --		
2,4-DIMETHYLPHENOL	<0.01	
2,4-DINITROPHENOL	<0.05	
2,4-DINITROTOLUENE	<0.01	
2,6-DICHLOROPHENOL	<0.01	
2,6-DINITROTOLUENE	<0.01	
2-CHLORONAPHTHALENE	<0.01	
2-CHLOROPHENOL	<0.01	
2-METHYLNAPHTHALENE	<0.01	
2-METHYLPHENOL (O-CRESOL)	<0.01	
2-NAPHTHYLAMINE	<0.01	
2-NITROANILINE	<0.01	
2-NITROPHENOL	<0.01	
2-PICOLINE	<0.01	
3,3-DICHLOROBENZIDINE	<0.02	
3-METHYLCHOLANTHRENE	<0.1	
3-NITROANILINE	<0.01	
4,6-DINITRO-2-METHYLPHENOL	<0.05	
4-AMINOBIPHENYL	<0.01	
4-BROMOPHENYL PHENYL ETHER	<0.01	
4-CHLORO-3-METHYLPHENOL	<0.01	
4-CHLORO-2-METHYLPHENOL	<0.01	
4-CHLOROPHENOL	<0.01	
4-CHLOROPHENYL PHENYL ETHER	<0.01	
4-METHYLPHENOL/3-METHYLPHENOL	<0.01	
4-NITROANILINE	<0.01	
4-NITROPHENOL	<0.0005	
12-DIMETHYLBENZENE (A) ANTHRACENE	<0.01	
A,A-DIMETHYLPHENETHYLAMINE	ND	
ACENAPHTHENE	<0.01	
ACENAPHTHYLENE	<0.01	
ACETOPHENONE	<0.01	
ANILINE	<0.01	
ANTHRACENE	<0.01	
ARAMITE	<0.01	
1,2-DIPHENYLHYDRAZINE (AZOBENZENE)	<0.01	
BENZIDINE	<0.02	
BENZO (A) ANTHRACENE	<0.01	
BENZO (A) PYRENE	<0.01	
BENZO (B) FLUORANTHENE	<0.01	
BENZO (GHI) PERYLENE	<0.01	
BENZO (K) FLUORANTHENE	<0.01	
BENZYL ALCOHOL	<0.01	
BIS (2-CHLOROETHOXY) METHANE	<0.01	
BIS (2-CHLOROETHYL) ETHER	<0.01	
BIS (2-CHLOROISOPROPYL) ETHER	<0.01	
BIS (2-ETHYLHEXYL) PHTHALATE	<0.01	
BUTYL BENZYL PHTHALATE	<0.01	
CHRYSENE	<0.01	
DI-N-BUTYLPHTHALATE	<0.01	
DI-N-OCTYLPHTHALATE	<0.01	
DIBENZO (A,H) ANTHRACENE	<0.01	
DIBENZOFURAN	<0.01	
DIETHYLPHTHALATE	<0.01	
3,3'-DIMETHYLBENZIDINE	<0.01	
DIMETHYLPHTHALATE	<0.01	
DINOSEB	<0.001	
DIPHENYLAMINE	<0.01	

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Sample Type: Monitoring Wells

SITE CODE	83-6	83-6	
SAMPLE DATE	04/07/94	11/18/94	
SAMPLE TIME	18:20	12:00	
LAB	EL	EL	
LAB NUMBER	94-13571	94-58154	
SAMPLE NUMBER	HL-9404-100	HL-9411-100	
-- SEMI-VOLATILE EXTRACTABLES --			
ETHYL METHANESULFONATE	<0.01		
FAMPHUR	<0.01		
FLUORANTHENE	<0.01		
FLUORENE	<0.01		
2-ACETYL AMINO FLUORENE	<0.01		
HEXACHLOROBENZENE	<0.01		
HEXACHLOROBUTADIENE	<0.001		
HEXACHLOROCYCLOPENTADIENE	<0.01		
HEXACHLOROETHANE	<0.01		
HEXACHLOROPHENE	ND		
HEXACHLOROPHROPENE	<0.01		
INDENO (1,2,3-CD) PYRENE	<0.01		
ISODRIN	<0.0001		
ISOPHORONE	<0.01		
KEPONE	<0.001		
ISOSAFROLE	<0.01		
METHYL METHANESULFONATE	<0.01		
5-NITRO-O-TOLUIDINE	<0.01		
N-NITROSO-DI-N-BUTYLAMINE	<0.01		
N-NITROSO-DI-N-PROPYLAMINE	<0.01		
N-NITROSODIMETHYLAMINE	<0.01		
N-NITROSODIPHENYLAMINE	<0.01		
N-NITROSOPIPERIDINE	<0.01		
N-NITROSODIETHYLAMINE	<0.01		
N-NITROSOPYRROLIDINE	<0.01		
O-TOLUIDINE	<0.01		
N-NITROSOMORPHOLINE	<0.01		
N-NITROSOMETHYLETHYLAMINE	<0.01		
NAPHTHALENE	<0.001		
NITROBENZENE	<0.01		
4-NITROQUINOLINE-N-OXIDE	<0.1		
P-CHLOROANILINE	<0.01		
P-DIMETHYLAMINOAZOBENZENE	<0.01		
1,4-NAPHTHOQUINONE	<0.1		
PARATHION	<0.01		
PENTACHLOROBENZENE	<0.01		
PENTACHLORONITROBENZENE	<0.01		
PENTACHLOROPHENOL	<0.00005		
PHENACETIN	<0.01		
PHENANTHRENE	<0.01		
PHENOL	<0.01		
O,O,O-TRIETHYLPHOSPHOROTHIOATE	<0.01		
PYRENE	<0.01		
PYRIDINE	<0.02		
SAFROLE	<0.01		
THIONAZIN	<0.01		
-- HYDROCARBONS --			
M+P-XYLENE	<0.001		
M+P-XYLENE		<0.001	
ACIFLOURFEN	<0.0005		
BENTAZON	<0.0025		
CHLORAMBEN	<0.0005		
DACTHAL	<0.001		
DALAPON	<0.01		
DICAMBA	<0.00025		
DICHLORPROP	<0.001		

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	83-6	83-6
SAMPLE DATE	04/07/94	11/18/94
SAMPLE TIME	18:20	12:00
LAB	EL	EL
LAB NUMBER	94-13571	94-58154
SAMPLE NUMBER	HL-9404-100	HL-9411-100
-- HYDROCARBONS --		
AROCLOR 1016	<0.001	
AROCLOR 1221	<0.002	
AROCLOR 1232	<0.001	
AROCLOR 1242	<0.001	
AROCLOR 1248	<0.001	
AROCLOR 1254	<0.001	
AROCLOR 1260	<0.001	
AROCLOR 1262	<0.001	
AROCLOR 1268	<0.001	
2,4-D	<0.001	
2,4-DB	<0.0025	
DIALLATE (AVADEX)	<0.01	
3,5-DICHLOROBEZOIC ACID	<0.0005	
DIMETHOATE (CYGON)	<0.1	
DISULFOTON	<0.01	
MCPA	<0.2	
MCPP	<0.2	
METHYL PARATHION (PENNCAP-M)	<0.01	
PHORATE (THIMET)	<0.01	
SULFOTEP	<0.01	
2,4,5-T	<0.0002	
2,4,5-TP (SILVEX)	<0.0002	
-- OTHER PARAMETERS --		
4;4'-DDD	<0.0001	
4;4'-DDE	<0.0001	
4;4'-DDT	<0.0001	
ALDRIN	<0.00005	
ALPHA-BHC	<0.00005	
BETA-BHC	<0.00005	
GAMMA-CHLORDANE	<0.00005	
CYANIDE (CN) TOT	<0.005	<0.005
DELTA-BHC	<0.00005	
DIELDRIN	<0.0001	
ENDOSULFAN I	<0.00005	
ENDOSULFAN II	<0.0001	
ENDOSULFAN SULFATE	<0.0001	
ENDRIN	<0.0001	
ENDRIN ALDEHYDE	<0.0001	
ENDRIN KETONE	<0.0001	
GAMMA-BHC(LINDANE)	<0.00005	
HEPTACHLOR	<0.00005	
HEPTACHLOR EPOXIDE	<0.00005	
METHOXYCHLOR	<0.0005	
PRONAMIDE	<0.01	
SULFIDE AS S	<0.04	
CHEMICAL OXYGEN DEMAND		2.0
TOXAPHENE	<0.005	

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Sample Type: Monitoring Wells

SITE CODE	83-7	83-7
SAMPLE DATE	11/11/89	11/21/94
SAMPLE TIME	18:35	11:10
LAB	EL	HYDRO
LAB NUMBER	89-20183	
REMARKS		NO SAMPLE
SAMPLE NUMBER	HL-8911-004	HL-9411-101
-- PHYSICAL PARAMETERS --		
DEPTH TO WATER LEVEL (FEET)	33.7	DRY
-- VOLATILE ORGANICS --		
1,1,1,2-TETRACHLOROETHANE	<0.001	
1,1,1-TRICHLOROETHANE	<0.0005	
1,1,2,2-TETRACHLOROETHANE	<0.001	
1,1,2-TRICHLOROETHANE	<0.001	
1,1-DICHLOROETHANE	<0.001	
1,1-DICHLOROETHENE	<0.0005	
1,1-DICHLOROPROPENE	<0.001	
1,2-DIBROMOETHANE	<0.001	
1,2-DICHLOROETHANE	<0.0005	
1,2-DICHLOROPROPANE	<0.001	
2,2-DICHLOROPROPANE	<0.001	
2-CHLOROTOLUENE	<0.001	
4-CHLOROTOLUENE	<0.001	
BENZENE	<0.0005	
BROMOBENZENE	<0.001	
BROMOCHLOROMETHANE	<0.001	
BROMODICHLOROMETHANE	<0.001	
BROMOFORM	<0.001	
BROMOMETHANE	<0.001	
CARBON TETRACHLORIDE	<0.0005	
CHLOROBENZENE	<0.001	
CHLOROETHANE	<0.001	
CHLOROFORM	<0.001	
CHLOROMETHANE	<0.001	
CIS-1,2-DICHLOROETHENE	0.0044	
CIS-1,3-DICHLOROPROPENE	<0.001	
DIBROMOCHLOROMETHANE	<0.001	
DIBROMOMETHANE	<0.001	
DICHLORODIFLUOROMETHANE	<0.001	
ETHYLBENZENE	<0.001	
M-XYLENE	<0.001	
O-XYLENE	<0.001	
P-XYLENE	<0.001	
METHYLENE CHLORIDE	<0.001	
STYRENE	<0.001	
TETRACHLOROETHENE	<0.0005	
TOLUENE	<0.001	
TRANS-1,2-DICHLOROETHENE	<0.001	
TRANS-1,3-DICHLOROPROPENE	<0.001	
TRICHLOROETHENE	<0.0005	
TRICHLOROFLUOROMETHANE	<0.001	
VINYL CHLORIDE	<0.0005	
-- SEMI-VOLATILE EXTRACTABLES --		
1,2,3-TRICHLOROBENZENE	<0.001	
1,2,3-TRICHLOROPROPANE	<0.001	
1,2,4-TRICHLOROBENZENE	<0.001	
1,2,4-TRIMETHYLBENZENE	<0.001	
1,2-DIBROMO-3-CHLOROPROPANE	<0.001	
1,2-DICHLOROBENZENE	<0.001	
1,3,5-TRIMETHYLBENZENE	<0.001	
1,3-DICHLOROBENZENE	<0.001	
1,3-DICHLOROPROPANE	<0.001	

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TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	83-7	83-7
SAMPLE DATE	11/11/89	11/21/94
SAMPLE TIME	18:35	11:10
LAB	EL	HYDRO
LAB NUMBER	89-20183	
REMARKS		NO SAMPLE
SAMPLE NUMBER	HL-8911-004	HL-9411-101
-- SEMI-VOLATILE EXTRACTABLES --		
1,4-DICHLOROBENZENE	<0.0005	
DICHLOROMONOFLUOROMETHANE	<0.001	
HEXACHLOROBUTADIENE	<0.001	
ISOPROPYLBENZENE	<0.001	
N-BUTYLBENZENE	<0.001	
N-PROPYLBENZENE	<0.001	
NAPHTHALENE	<0.001	
P-ISOPROPYLTOLUENE	<0.001	
SEC-BUTYLBENZENE	<0.001	
TERT-BUTYLBENZENE	<0.001	

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Sample Type: Monitoring Wells

SITE CODE	EPA-1	EPA-1	EPA-1	EPA-1	EPA-1	EPA-1	EPA-1
SAMPLE DATE	04/05/91	01/22/92	05/20/92	11/17/92	05/25/93	12/15/93	04/08/94
SAMPLE TIME	12:00	09:45	13:30	08:00	09:00	10:45	16:00
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	91-12768	92-4687	92-19275	92-49147	93-20448	93-59621	94-13572
SAMPLE NUMBER	HL-9104-105	HL-9201-103	HL-9205-123	HL-9211-106	HL-9305-101	HL-9312-101	HL-9404-101
-- PHYSICAL PARAMETERS --							
DEPTH TO WATER LEVEL (FEET)	45.07	44.73	45.37	43.84	44.11	42.08	44.64
PH (FLD)				7.03	6.85	7.06	7.51
PH				7.3	7.1	7.0	
SC (UMHOS/CM AT 25 C)				1450.0	1390.0	1890.0	
SC (UMHOS/CM AT 25 C) (FLD)				1501.0	1394.0	2055.0	1686.0
TDS (MEASURED AT 180 C)				955.0	905.0		
TOTAL SUSPENDED SOLIDS				2140.0	66.0		
WATER TEMPERATURE (C) (FLD)		10.0		5.9	15.3	7.6	10.2
-- MAJOR CONSTITUENTS --							
CALCIUM (CA) DIS				168.0	163.0		
MAGNESIUM (MG) DIS				58.0	56.0		
SODIUM (NA) DIS				68.0	65.0		
POTASSIUM (K) DIS				4.0	4.0		
TOTAL ALKALINITY AS CACO3				526.0	464.0		
BICARBONATE (HCO3)				642.0	566.0		
CARBONATE AS CO3				0.0	0.0		
SULFATE (SO4)				162.0	162.0	197.0	
CHLORIDE (CL)				101.0	93.0	159.0	
-- NUTRIENTS --							
AMMONIA (NH3 AS N)				<0.1	<0.1		
NITRATE (NO3-N)				2.94	2.77	2.09	
-- METALS & MINOR CONSTITUENTS --							
ANTIMONY (SB) DIS						<0.05	<0.05
ARSENIC (AS) DIS				<0.005	<0.005	<0.005	<0.005
BARIUM (BA) DIS				<0.1	<0.1	<0.1	0.1
BERYLLIUM (BE) DIS						<0.001	<0.001
CADMIUM (CD) DIS				<0.001	<0.001	<0.001	<0.001
CHROMIUM (CR) DIS				<0.01	<0.01	<0.01	<0.01
COBALT (CO) DIS						<0.01	<0.01
COPPER (CU) DIS						<0.01	<0.01
IRON (FE) DIS				<0.03	<0.03	<0.03	
LEAD (PB) DIS				<0.01	<0.01	<0.01	<0.01
MANGANESE (MN) DIS				<0.02	0.01		
MERCURY (HG) DIS				<0.001	<0.001	<0.001	<0.001
NICKEL (NI) DIS						0.06	0.02
SELENIUM (SE) DIS				<0.005	<0.005	<0.005	<0.005
SILVER (AG) DIS				<0.005	<0.005	<0.005	<0.005
THALLIUM (TL) DIS						<0.1	<0.1
TIN (SN) DIS							<0.1
VANADIUM (V) DIS						<0.1	<0.1
ZINC (ZN) DIS						<0.01	0.02
-- VOLATILE ORGANICS --							
ACETONITRILE METHYLCYANIDE							<0.02
ALLYLCHLORIDE 3-CHLORO-1-PROPENE							<0.001
1,1,1,2-TETRACHLOROETHANE						<0.001	<0.001
1,1,1-TRICHLOROETHANE	<0.0005	0.00065	0.00074	<0.001	<0.001	<0.001	<0.001
1,1,2,2-TETRACHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,2-TRICHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-DICHLOROETHANE	0.0038	0.0058	0.0049	0.0059	0.0044	0.0026	0.0036
1,1-DICHLOROETHENE	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001
1,1-DICHLOROPROPENE							<0.001
1,2-DIBROMOETHANE						<0.001	<0.001
1,2-DICHLOROETHANE	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001

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Sample Type: Monitoring Wells

SITE CODE	EPA-1	EPA-1	EPA-1	EPA-1	EPA-1	EPA-1	EPA-1
SAMPLE DATE	04/05/91	01/22/92	05/20/92	11/17/92	05/25/93	12/15/93	04/08/94
SAMPLE TIME	12:00	09:45	13:30	08:00	09:00	10:45	16:00
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	91-12768	92-4687	92-19275	92-49147	93-20448	93-59621	94-13572
SAMPLE NUMBER	HL-9104-105	HL-9201-103	HL-9205-123	HL-9211-106	HL-9305-101	HL-9312-101	HL-9404-101
-- VOLATILE ORGANICS --							
1,2-DICHLOROPROPANE						0.0046	0.0028
2,2-DICHLOROPROPANE							<0.001
2-BUTANONE (METHYL-ETHYL-KETONE)	<0.01						
2-CHLOROETHYL VINYL ETHER	<0.01	<0.01	<0.01	<0.001	<0.001		
2-HEXANONE	<0.01					<0.02	<0.02
4-BROMOFLUOROBENZENE	<0.01	<0.01	<0.01	<0.01	<0.01		
4-METHYL-2-PENTANONE	<0.01						
ACETONE	<0.01					<0.02	<0.05
ACROLEIN	<0.01						<0.02
ACRYLONITRILE	<0.01					<0.02	<0.02
BENZENE	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001
BROMOCHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMODICHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMOFORM	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMOMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CARBON DISULFIDE	<0.01					<0.001	<0.001
CARBON TETRACHLORIDE	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001
CHLOROBENZENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROFORM	0.007	0.015	0.016	0.015	0.011	0.0056	0.0061
CHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROPRENE 2-CHLORO-1,3-BUTADIENE							<0.001
CIS-1,2-DICHLOROETHENE						0.0017	0.001
CIS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DIBROMOCHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DIBROMOMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DICHLORODIFLUOROMETHANE	0.011	0.007	0.016	0.0037	0.0062	0.0016	0.0044
ETHANOL	<0.01						
ETHYL METHACRYLATE	<0.01	<0.01	<0.01	<0.001	<0.001		<0.001
ETHYLBENZENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
IODOMETHANE	<0.01	<0.01	<0.01	<0.001	<0.001	<0.001	<0.001
ISOBUTANOL							<0.05
TOTAL XYLENE	<0.001	<0.001	<0.001	<0.001	<0.001		
M-P XYLENE						<0.001	
O-XYLENE						<0.001	<0.001
METHACRYLONITRILE							<0.02
METHYL ETHYL KETONE							<0.02
METHYL ETHYL KETONE						<0.02	
METHYL ISOBUTL KETONE						<0.02	<0.02
METHYL METHACRYLATE							<0.002
METHYLENE CHLORIDE	0.0042	0.0034	0.0012	0.0012	0.0014	0.0023	<0.001
PROPIONITRILE ETHYLCYANIDE							<0.02
STYRENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TETRACHLOROETHENE	0.066	0.081	0.079	0.094	0.059	0.036	0.033
TOLUENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRICHLOROETHENE	0.0074	0.0054	0.0059	0.0049	0.0034	0.0017	0.0022
TRICHLOROFLUOROMETHANE	0.0043	0.0078	0.0083	0.0055	0.0051	0.0016	0.003
VINYL ACETATE	<0.01	<0.01	<0.01	<0.02	<0.001	<0.001	<0.001
VINYL CHLORIDE	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001
PICLORAM							<0.0005
-- SEMI-VOLATILE EXTRACTABLES --							
ALPHA-CHLORDANE							<0.00005
1,4-BENZENEDIAMINE							ND
CHLOROBENZILATE							<0.01

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Sample Type: Monitoring Wells

SITE CODE	EPA-1	EPA-1	EPA-1	EPA-1	EPA-1	EPA-1	EPA-1
SAMPLE DATE	04/05/91	01/22/92	05/20/92	11/17/92	05/25/93	12/15/93	04/08/94
SAMPLE TIME	12:00	09:45	13:30	08:00	09:00	10:45	16:00
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	91-12768	92-4687	92-19275	92-49147	93-20448	93-59621	94-13572
SAMPLE NUMBER	HL-9104-105	HL-9201-103	HL-9205-123	HL-9211-106	HL-9305-101	HL-9312-101	HL-9404-101
-- SEMI-VOLATILE EXTRACTABLES --							
1,2,3-TRICHLOROPROPANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2,4,5-TETRACHLOROBENZENE							<0.01
1,2,4-TRICHLOROBENZENE							<0.001
1,2-DIBROMO-3-CHLOROPROPANE						<0.001	<0.001
1,2-DICHLOROBENZENE						<0.001	<0.001
1,3,5-TRINITROBENZENE							<0.01
1,3-DICHLOROBENZENE							<0.001
1,3-DICHLOROPROPANE							<0.001
1,3-DINITROBENZENE							<0.01
TRANS-1,4-DICHLORO-2-BUTENE						<0.002	
1,4-DICHLORO-2-BUTENE	<0.01						<0.002
1,4-DICHLOROBENZENE						<0.001	<0.001
1,4-DIFLUOROBENZENE	<0.01	<0.01	<0.01	<0.001	<0.001		
METHAPYRILENE							ND
1-METHYLNAPHTHALENE							<0.01
1-NAPHTHYLAMINE							<0.01
2,3,4,6-TETRACHLOROPHENOL							<0.01
2,4,5-TRICHLOROPHENOL							<0.01
2,4,6-TRICHLOROPHENOL							<0.01
2,4-DICHLOROPHENOL							<0.01
2,4-DIMETHYLPHENOL							<0.01
2,4-DINITROPHENOL							<0.05
2,4-DINITROTOLUENE							<0.01
2,6-DICHLOROPHENOL							<0.01
2,6-DINITROTOLUENE							<0.01
2-CHLORONAPHTHALENE							<0.01
2-CHLOROPHENOL							<0.01
2-METHYLNAPHTHALENE							<0.01
2-METHYLPHENOL (O-CRESOL)							<0.01
2-NAPHTHYLAMINE							<0.01
2-NITROANILINE							<0.01
2-NITROPHENOL							<0.01
2-PICOLINE							<0.01
3,3-DICHLOROBENZIDINE							<0.02
3-METHYLCHOLANTHRENE							<0.1
3-NITROANILINE							<0.01
4,6-DINITRO-2-METHYLPHENOL							<0.05
4-AMINOBIPHENYL							<0.01
4-BROMOPHENYL PHENYL ETHER							<0.01
4-CHLORO-3-METHYLPHENOL							<0.01
4-CHLORO-2-METHYLPHENOL							<0.01
4-CHLOROPHENOL							<0.01
4-CHLOROPHENYL PHENYL ETHER							<0.01
4-METHYLPHENOL/3-METHYLPHENOL							<0.01
4-NITROANILINE							<0.01
4-NITROPHENOL							<0.0005
7,12-DIMETHYLBENZENE (A) ANTHRACENE							<0.01
A,A-DIMETHYLPHENETHYLAMINE							ND
ACENAPHTHENE							<0.01
ACENAPHTHYLENE							<0.01
ACETOPHENONE							<0.01
ANILINE							<0.01
ANTHRACENE							<0.01
ARAMITE							<0.01
1,2-DIPHENYLHYDRAZINE (AZOBENZENE)							<0.01
BENZIDINE							<0.02
BENZO (A) ANTHRACENE							<0.01

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	EPA-1	EPA-1	EPA-1	EPA-1	EPA-1	EPA-1	EPA-1
SAMPLE DATE	04/05/91	01/22/92	05/20/92	11/17/92	05/25/93	12/15/93	04/08/94
SAMPLE TIME	12:00	09:45	13:30	08:00	09:00	10:45	16:00
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	91-12768	92-4687	92-19275	92-49147	93-20448	93-59621	94-13572
SAMPLE NUMBER	HL-9104-105	HL-9201-103	HL-9205-123	HL-9211-106	HL-9305-101	HL-9312-101	HL-9404-101
-- SEMI-VOLATILE EXTRACTABLES --							
BENZO (A) PYRENE							<0.01
BENZO (B) FLUORANTHENE							<0.01
BENZO (GHI) PERYLENE							<0.01
BENZO (K) FLUORANTHENE							<0.01
BENZYL ALCOHOL							<0.01
BIS (2-CHLOROETHOXY) METHANE							<0.01
BIS (2-CHLOROETHYL) ETHER							<0.01
BIS (2-CHLOROISOPROPYL) ETHER							<0.01
BIS (2-ETHYLHEXYL) PHTHALATE							<0.01
BUTYL BENZYL PHTHALATE							<0.01
CHRYSENE							<0.01
DI-N-BUTYLPHTHALATE							<0.01
DI-N-OCTYLPHTHALATE							<0.01
DIBENZO (A,H) ANTHRACENE							<0.01
DIBENZOFURAN							<0.01
DIETHYLPHTHALATE							<0.01
3,3'-DIMETHYLBENZIDINE							<0.01
DIMETHYLPHTHALATE							<0.01
DINOSEB							<0.001
DIPHENYLAMINE							<0.01
ETHYL METHANESULFONATE							<0.01
FAMPHUR							<0.01
FLUORANTHENE							<0.01
FLUORENE							<0.01
2-ACETYL AMINO FLUORENE							<0.01
HEXACHLOROBENZENE							<0.01
HEXACHLOROBUTADIENE							<0.001
HEXACHLOROCYCLOPENTADIENE							<0.01
HEXACHLOROETHANE							<0.01
HEXACHLOROPHENE							ND
HEXACHLOROPHROPENE							<0.01
INDENO (1,2,3-CD) PYRENE							<0.01
ISODRIN							<0.0001
ISOPHORONE							<0.01
KEPONE							<0.001
ISOSAFROLE							<0.01
METHYL METHANESULFONATE							<0.01
5-NITRO-O-TOLUIDINE							<0.01
N-NITROSO-DI-N-BUTYLAMINE							<0.01
N-NITROSO-DI-N-PROPYLAMINE							<0.01
N-NITROSODIMETHYLAMINE							<0.01
N-NITROSODIPHENYLAMINE							<0.01
N-NITROSOPIPERIDINE							<0.01
N-NITROSODIETHYLAMINE							<0.01
N-NITROSOPYRROLIDINE							<0.01
O-TOLUIDINE							<0.01
N-NITROSOMORPHOLINE							<0.01
N-NITROSOMETHYLETHYLAMINE							<0.01
NAPHTHALENE						<0.001	<0.001
NITROBENZENE							<0.01
4-NITROQUINOLINE-N-OXIDE							<0.1
P-CHLOROTOLUENE							<0.01
P-CHLOROANILINE							<0.01
P-DIMETHYLAMINOAZOBENZENE							<0.01
1,4-NAPHTHOQUINONE							<0.1
PARATHION							<0.01
PENTACHLOROBENZENE							<0.01

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TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	EPA-1	EPA-1	EPA-1	EPA-1	EPA-1	EPA-1	EPA-1
SAMPLE DATE	04/05/91	01/22/92	05/20/92	11/17/92	05/25/93	12/15/93	04/08/94
SAMPLE TIME	12:00	09:45	13:30	08:00	09:00	10:45	16:00
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	91-12768	92-4687	92-19275	92-49147	93-20448	93-59621	94-13572
SAMPLE NUMBER	HL-9104-105	HL-9201-103	HL-9205-123	HL-9211-106	HL-9305-101	HL-9312-101	HL-9404-101
-- SEMI-VOLATILE EXTRACTABLES --							
PENTACHLORONITROBENZENE							<0.01
PENTACHLOROPHENOL							<0.00005
PHENACETIN							<0.01
PHENANTHRENE							<0.01
PHENOL							<0.01
O,O,O-TRIETHYLPHOSPHOROTHIOATE							<0.01
PYRENE							<0.01
PYRIDINE							<0.02
SAFROLE							<0.01
THIONAZIN							<0.01
-- HYDROCARBONS --							
M+P-XYLENE							<0.001
ACIFLOURFEN							<0.0005
BENTAZON							<0.0025
CHLORAMBEN							<0.0005
DACTHAL							<0.001
DALAPON							<0.01
DICAMBA							0.00026
DICHLORPROP							<0.001
AROCLOR 1016							<0.001
AROCLOR 1221							<0.002
AROCLOR 1232							<0.001
AROCLOR 1242							<0.001
AROCLOR 1248							<0.001
AROCLOR 1254							<0.001
AROCLOR 1260							<0.001
AROCLOR 1262							<0.001
AROCLOR 1268							<0.001
2,4-D							<0.001
2,4-DB							<0.0025
DIALLATE (AVADEX)							<0.01
3,5-DICHLOROBEZOIC ACID							<0.0005
DIMETHOATE (CYGON)							<0.1
DISULFOTON							<0.01
MCPA							<0.2
MCPP							<0.2
METHYL PARATHION (PENNCAP-M)							<0.01
PHORATE (THIMET)							<0.01
SULFOTEP							<0.01
2,4,5-T							<0.0002
2,4,5-TP (SILVEX)							<0.0002
-- OTHER PARAMETERS --							
4;4'-DDD							<0.0001
4;4'-DDE							<0.0001
4;4'-DDT							<0.0001
ALDRIN							<0.00005
ALPHA-BHC							<0.00005
BETA-BHC							<0.00005
GAMMA-CHLORDANE							<0.00005
CYANIDE (CN) TOT				<0.005	<0.005	<0.005	<0.005
DELTA-BHC							<0.00005
DIELDRIN							<0.0001
ENDOSULFAN I							<0.00005
ENDOSULFAN II							<0.0001
ENDOSULFAN SULFATE							<0.0001

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TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	EPA-1	EPA-1	EPA-1	EPA-1	EPA-1	EPA-1	EPA-1
SAMPLE DATE	04/05/91	01/22/92	05/20/92	11/17/92	05/25/93	12/15/93	04/08/94
SAMPLE TIME	12:00	09:45	13:30	08:00	09:00	10:45	16:00
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	91-12768	92-4687	92-19275	92-49147	93-20448	93-59621	94-13572
SAMPLE NUMBER	HL-9104-105	HL-9201-103	HL-9205-123	HL-9211-106	HL-9305-101	HL-9312-101	HL-9404-101
-- OTHER PARAMETERS --							
ENDRIN							<0.0001
ENDRIN ALDEHYDE							<0.0001
ENDRIN KETONE							<0.0001
GAMMA-BHC(LINDANE)							<0.00005
HEPTACHLOR							<0.00005
HEPTACHLOR EPOXIDE							<0.00005
METHOXYCHLOR							<0.0005
PRONAMIDE							<0.01
SULFIDE AS S							<0.04
CHEMICAL OXYGEN DEMAND				18.0	<1.0	16.0	
TOXAPHENE							<0.005

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Sample Type: Monitoring Wells

SITE CODE	EPA-1	EPA-1
SAMPLE DATE	08/24/94	11/21/94
SAMPLE TIME	13:00	10:30
LAB	EL	EL
LAB NUMBER	94-40098	94-58155
SAMPLE NUMBER	HL-9408-100	HL-9411-102
-- PHYSICAL PARAMETERS --		
DEPTH TO WATER LEVEL (FEET)	44.76	45.02
PH (FLD)	7.22	7.08
PH		6.8
SC (UMHOS/CM AT 25 C)		1700.0
SC (UMHOS/CM AT 25 C) (FLD)	1400.0	1583.0
WATER TEMPERATURE (C) (FLD)	14.8	8.3
-- MAJOR CONSTITUENTS --		
SULFATE (SO4)		159.0
CHLORIDE (CL)		134.0
-- NUTRIENTS --		
NITRATE + NITRITE AS N		6.18
-- METALS & MINOR CONSTITUENTS --		
ANTIMONY (SB) DIS		<0.05
ARSENIC (AS) DIS		<0.005
BARIUM (BA) DIS		0.1
BERYLLIUM (BE) DIS		<0.001
CADMIUM (CD) DIS		<0.001
CHROMIUM (CR) DIS		<0.01
COBALT (CO) DIS		<0.01
COPPER (CU) DIS		<0.01
IRON (FE) DIS		<0.03
LEAD (PB) DIS		<0.01
MERCURY (HG) DIS		<0.001
NICKEL (NI) DIS		0.01
SELENIUM (SE) DIS		<0.005
SILVER (AG) DIS		<0.005
THALLIUM (TL) DIS		<0.1
VANADIUM (V) DIS		<0.1
ZINC (ZN) DIS		<0.01
-- VOLATILE ORGANICS --		
1,1,1,2-TETRACHLOROETHANE	<0.001	<0.001
1,1,1-TRICHLOROETHANE	<0.001	<0.001
1,1,2,2-TETRACHLOROETHANE	<0.001	<0.001
1,1,2-TRICHLOROETHANE	<0.001	<0.001
1,1-DICHLOROETHANE	0.002	0.0028
1,1-DICHLOROETHENE	<0.001	<0.001
1,2-DIBROMOETHANE	<0.001	<0.001
1,2-DICHLOROETHANE	<0.001	<0.001
1,2-DICHLOROPROPANE	0.0018	0.0025
2-HEXANONE	<0.02	<0.02
ACETONE	<0.05	<0.05
ACRYLONITRILE	<0.02	<0.02
BENZENE	<0.001	<0.001
BROMOCHLOROMETHANE	<0.001	<0.001
BROMODICHLOROMETHANE	<0.001	<0.001
BROMOFORM	<0.001	<0.001
BROMOMETHANE	<0.001	<0.001
CARBON DISULFIDE	<0.001	<0.001
CARBON TETRACHLORIDE	<0.001	<0.001
CHLOROBENZENE	<0.001	<0.001
CHLOROETHANE	<0.001	<0.001
CHLOROFORM	0.0048	0.006
CHLOROMETHANE	<0.001	<0.001

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Sample Type: Monitoring Wells

SITE CODE	EPA-1	EPA-1
SAMPLE DATE	08/24/94	11/21/94
SAMPLE TIME	13:00	10:30
LAB	EL	EL
LAB NUMBER	94-40098	94-58155
SAMPLE NUMBER	HL-9408-100	HL-9411-102
-- VOLATILE ORGANICS --		
CIS-1,2-DICHLOROETHENE	<0.001	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001	<0.001
DIBROMOCHLOROMETHANE	<0.001	<0.001
DIBROMOMETHANE	<0.001	<0.001
DICHLORODIFLUOROMETHANE	0.002	0.0028
ETHYLBENZENE	<0.001	<0.001
IODOMETHANE	<0.001	<0.001
O-XYLENE	<0.001	<0.001
METHYL ETHYL KETONE	<0.02	
METHYL ETHYL KETONE		<0.02
METHYL ISOBUTL KETONE	<0.02	<0.02
METHYLENE CHLORIDE	<0.001	<0.001
STYRENE	<0.001	<0.001
TETRACHLOROETHENE	0.041	0.041
TOLUENE	<0.001	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001	<0.001
TRICHLOROETHENE	0.0012	0.0018
TRICHLOROFLUOROMETHANE	0.0018	0.0022
VINYL ACETATE	<0.001	<0.001
VINYL CHLORIDE	<0.001	<0.001
-- SEMI-VOLATILE EXTRACTABLES --		
1,2,3-TRICHLOROPROPANE	<0.001	<0.001
1,2-DIBROMO-3-CHLOROPROPANE	<0.001	<0.001
1,2-DICHLOROBENZENE	<0.001	<0.001
TRANS-1,4-DICHLORO-2-BUTENE	<0.002	<0.002
1,4-DICHLOROBENZENE	<0.001	<0.001
-- HYDROCARBONS --		
M+P-XYLENE	<0.001	<0.001
-- OTHER PARAMETERS --		
CYANIDE (CN) TOT		<0.005
CHEMICAL OXYGEN DEMAND		11.0

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	FAIR GRND
SAMPLE DATE	06/05/90
SAMPLE TIME	10:45
LAB	EL
LAB NUMBER	90-15039
SAMPLE NUMBER	HL-9006-101
-- VOLATILE ORGANICS --	
1,1,1,2-TETRACHLOROETHANE	<0.001
1,1,1-TRICHLOROETHANE	<0.0005
1,1,2,2-TETRACHLOROETHANE	<0.001
1,1,2-TRICHLOROETHANE	<0.001
1,1-DICHLOROETHANE	<0.001
1,1-DICHLOROETHENE	<0.0005
1,1-DICHLOROPROPENE	<0.001
1,2-DIBROMOETHANE	<0.001
1,2-DICHLOROETHANE	<0.0005
1,2-DICHLOROETHENE	<0.0005
1,2-DICHLOROPROPANE	<0.001
2,2-DICHLOROPROPANE	<0.001
2-CHLOROTOLUENE	<0.001
4-CHLOROTOLUENE	<0.001
BENZENE	<0.0005
BROMOBENZENE	<0.001
BROMOCHLOROMETHANE	<0.001
BROMODICHLOROMETHANE	0.0053
BROMOFORM	<0.001
BROMOMETHANE	<0.001
CARBON TETRACHLORIDE	<0.0005
CHLOROBENZENE	<0.001
CHLOROETHANE	<0.001
CHLOROFORM	0.088
CHLOROMETHANE	<0.001
CIS-1,2-DICHLOROETHENE	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001
DIBROMOCHLOROMETHANE	<0.001
DIBROMOMETHANE	<0.001
DICHLORODIFLUOROMETHANE	<0.001
ETHYLBENZENE	<0.001
M-XYLENE	<0.001
O-XYLENE	<0.001
P-XYLENE	<0.001
METHYLENE CHLORIDE	<0.001
STYRENE	<0.001
TETRACHLOROETHENE	<0.0005
TOLUENE	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001
TRICHLOROETHENE	<0.0005
TRICHLOROFLUOROMETHANE	<0.001
VINYL CHLORIDE	<0.0005
-- SEMI-VOLATILE EXTRACTABLES --	
1,2,3-TRICHLOROBENZENE	<0.001
1,2,3-TRICHLOROPROPANE	<0.001
1,2,4-TRICHLOROBENZENE	<0.001
1,2,4-TRIMETHYLBENZENE	<0.001
1,2-DIBROMO-3-CHLOROPROPANE	<0.001
1,2-DICHLOROBENZENE	<0.001
1,3,5-TRIMETHYLBENZENE	<0.001
1,3-DICHLOROBENZENE	<0.001
1,3-DICHLOROPROPANE	<0.001
1,4-DICHLOROBENZENE	<0.0005
DICHLOROMONOFLUOROMETHANE	<0.001
HEXACHLOROBUTADIENE	<0.001

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TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	FAIR GRND
SAMPLE DATE	06/05/90
SAMPLE TIME	10:45
LAB	EL
LAB NUMBER	90-15039
SAMPLE NUMBER	HL-9006-101
-- SEMI-VOLATILE EXTRACTABLES --	
ISOPROPYLBENZENE	<0.001
N-BUTYLBENZENE	<0.001
N-PROPYLBENZENE	<0.001
NAPHTHALENE	<0.001
P-ISOPROPYLTOLUENE	<0.001
SEC-BUTYLBENZENE	<0.001
TERT-BUTYLBENZENE	<0.001

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Sample Type: Monitoring Wells

SITE CODE	HL-1	HL-1
SAMPLE DATE	11/13/89	05/06/90
SAMPLE TIME	11:30	11:25
LAB	EL	EL
LAB NUMBER	89-20185	90-10827
SAMPLE NUMBER	HL-8911-006	HL-9005-110
-- PHYSICAL PARAMETERS --		
DEPTH TO WATER LEVEL (FEET)	17.53	
-- VOLATILE ORGANICS --		
1,1,1,2-TETRACHLOROETHANE	<0.001	<0.001
1,1,1-TRICHLOROETHANE	<0.0005	<0.0005
1,1,2,2-TETRACHLOROETHANE	<0.001	<0.001
1,1,2-TRICHLOROETHANE	<0.001	<0.001
1,1-DICHLOROETHANE	<0.001	<0.001
1,1-DICHLOROETHENE	<0.0005	<0.0005
1,1-DICHLOROPROPENE	<0.001	<0.001
1,2-DIBROMOETHANE	<0.001	<0.001
1,2-DICHLOROETHANE	<0.00005	<0.0005
1,2-DICHLOROPROPANE	<0.001	<0.001
2,2-DICHLOROPROPANE	<0.001	<0.001
2-CHLOROTOLUENE	<0.001	<0.001
4-CHLOROTOLUENE	<0.001	<0.001
BENZENE	<0.0005	<0.0005
BROMOBENZENE	<0.001	<0.001
BROMOCHLOROMETHANE	<0.001	<0.001
BROMODICHLOROMETHANE	<0.001	<0.001
BROMOFORM	<0.001	<0.001
BROMOMETHANE	<0.001	<0.001
CARBON TETRACHLORIDE	<0.0005	<0.0005
CHLOROBENZENE	<0.001	<0.001
CHLOROETHANE	<0.001	<0.001
CHLOROFORM	0.0035	0.0079
CHLOROMETHANE	<0.001	<0.001
CIS-1,2-DICHLOROETHENE	<0.001	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001	<0.001
DIBROMOCHLOROMETHANE	<0.001	<0.001
DIBROMOMETHANE	<0.001	<0.001
DICHLORODIFLUOROMETHANE	<0.001	<0.001
ETHYLBENZENE	<0.001	<0.001
M-XYLENE	<0.001	<0.001
O-XYLENE	<0.001	<0.001
P-XYLENE	<0.001	<0.001
METHYLENE CHLORIDE	<0.001	<0.001
STYRENE	<0.001	<0.001
TETRACHLOROETHENE	<0.0005	0.00083
TOLUENE	<0.001	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001	<0.001
TRICHLOROETHENE	<0.0005	<0.0005
TRICHLOROFLUOROMETHANE	<0.001	<0.001
VINYL CHLORIDE	<0.0005	<0.0005
-- SEMI-VOLATILE EXTRACTABLES --		
1,2,3-TRICHLOROBENZENE	<0.001	<0.001
1,2,3-TRICHLOROPROPANE	<0.001	<0.001
1,2,4-TRICHLOROBENZENE	<0.001	<0.001
1,2,4-TRIMETHYLBENZENE	<0.001	<0.001
1,2-DIBROMO-3-CHLOROPROPANE	<0.001	<0.001
1,2-DICHLOROBENZENE	<0.001	<0.001
1,3,5-TRIMETHYLBENZENE	<0.001	<0.001
1,3-DICHLOROBENZENE	<0.001	<0.001
1,3-DICHLOROPROPANE	<0.001	<0.001
1,4-DICHLOROBENZENE	<0.0005	<0.0005

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Sample Type: Monitoring Wells

SITE CODE	HL-1	HL-1
SAMPLE DATE	11/13/89	05/06/90
SAMPLE TIME	11:30	11:25
LAB	EL	EL
LAB NUMBER	89-20185	90-10827
SAMPLE NUMBER	HL-8911-006	HL-9005-110
-- SEMI-VOLATILE EXTRACTABLES --		
DICHLOROMONOFLUOROMETHANE		<0.001
HEXACHLOROBUTADIENE	<0.001	<0.001
ISOPROPYLBENZENE	<0.001	<0.001
N-BUTYLBENZENE	<0.001	<0.001
N-PROPYLBENZENE	<0.001	<0.001
NAPHTHALENE	<0.001	<0.001
P-ISOPROPYLTOLUENE	<0.001	<0.001
SEC-BUTYLBENZENE	<0.001	<0.001
TERT-BUTYLBENZENE	<0.001	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	HL-2
SAMPLE DATE	11/13/89
SAMPLE TIME	11:20
LAB	HYDRO
LAB NUMBER	
SAMPLE NUMBER	HL-8911-902

-- PHYSICAL PARAMETERS --	
DEPTH TO WATER LEVEL (FEET)	27.17

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	HL-3
SAMPLE DATE	11/13/89
SAMPLE TIME	11:50
LAB	HYDRO
LAB NUMBER	
SAMPLE NUMBER	HL-8911-903

-- PHYSICAL PARAMETERS --

DEPTH TO WATER LEVEL (FEET)	DRY

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	HL-5	HL-5
SAMPLE DATE	11/13/89	05/06/90
SAMPLE TIME	11:40	11:45
LAB	HYDRO	EL
LAB NUMBER		90-10829
SAMPLE NUMBER	HL-8911-905	HL-9005-112
-- PHYSICAL PARAMETERS --		
DEPTH TO WATER LEVEL (FEET)	29.31	
-- VOLATILE ORGANICS --		
1,1,1,2-TETRACHLOROETHANE		<0.001
1,1,1-TRICHLOROETHANE		<0.0005
1,1,2,2-TETRACHLOROETHANE		<0.001
1,1,2-TRICHLOROETHANE		<0.001
1,1-DICHLOROETHANE		<0.001
1,1-DICHLOROETHENE		<0.0005
1,1-DICHLOROPROPENE		<0.001
1,2-DIBROMOETHANE		<0.001
1,2-DICHLOROETHANE		<0.0005
1,2-DICHLOROPROPANE		<0.001
2,2-DICHLOROPROPANE		<0.001
2-CHLOROTOLUENE		<0.001
4-CHLOROTOLUENE		<0.001
BENZENE		<0.0005
BROMOBENZENE		<0.001
BROMOCHLOROMETHANE		<0.001
BROMODICHLOROMETHANE		<0.001
BROMOFORM		<0.001
BROMOMETHANE		<0.001
CARBON TETRACHLORIDE		<0.0005
CHLOROBENZENE		<0.001
CHLOROETHANE		<0.001
CHLOROFORM		0.0023
CHLOROMETHANE		<0.001
CIS-1,2-DICHLOROETHENE		<0.001
CIS-1,3-DICHLOROPROPENE		<0.001
DIBROMOCHLOROMETHANE		<0.001
DIBROMOMETHANE		<0.001
DICHLORODIFLUOROMETHANE		0.001
ETHYLBENZENE		<0.001
M-XYLENE		<0.001
O-XYLENE		<0.001
P-XYLENE		<0.001
METHYLENE CHLORIDE		<0.001
STYRENE		<0.001
TETRACHLOROETHENE		<0.0005
TOLUENE		<0.001
TRANS-1,2-DICHLOROETHENE		<0.001
TRANS-1,3-DICHLOROPROPENE		<0.001
TRICHLOROETHENE		<0.0005
TRICHLOROFLUOROMETHANE		<0.001
VINYL CHLORIDE		<0.0005
-- SEMI-VOLATILE EXTRACTABLES --		
1,2,3-TRICHLOROBENZENE		<0.001
1,2,3-TRICHLOROPROPANE		<0.001
1,2,4-TRICHLOROBENZENE		<0.001
1,2,4-TRIMETHYLBENZENE		<0.001
1,2-DIBROMO-3-CHLOROPROPANE		<0.001
1,2-DICHLOROBENZENE		<0.001
1,3,5-TRIMETHYLBENZENE		<0.001
1,3-DICHLOROBENZENE		<0.001
1,3-DICHLOROPROPANE		<0.001
1,4-DICHLOROBENZENE		<0.0005

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	HL-5	HL-5
SAMPLE DATE	11/13/89	05/06/90
SAMPLE TIME	11:40	11:45
LAB	HYDRO	EL
LAB NUMBER		90-10829
SAMPLE NUMBER	HL-8911-905	HL-9005-112
-- SEMI-VOLATILE EXTRACTABLES --		
DICHLOROMONOFLUOROMETHANE		<0.001
HEXACHLOROBUTADIENE		<0.001
ISOPROPYLBENZENE		<0.001
N-BUTYLBENZENE		<0.001
N-PROPYLBENZENE		<0.001
NAPHTHALENE		<0.001
P-ISOPROPYLTOLUENE		<0.001
SEC-BUTYLBENZENE		<0.001
TERT-BUTYLBENZENE		<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	HL-6
SAMPLE DATE	05/06/90
SAMPLE TIME	12:00
LAB	EL
LAB NUMBER	90-10830
SAMPLE NUMBER	HL-9005-113
-- VOLATILE ORGANICS --	
1,1,1,2-TETRACHLOROETHANE	<0.001
1,1,1-TRICHLOROETHANE	<0.0005
1,1,2,2-TETRACHLOROETHANE	<0.001
1,1,2-TRICHLOROETHANE	<0.001
1,1-DICHLOROETHANE	<0.001
1,1-DICHLOROETHENE	<0.0005
1,1-DICHLOROPROPENE	<0.001
1,2-DIBROMOETHANE	<0.001
1,2-DICHLOROETHANE	<0.0005
1,2-DICHLOROPROPANE	<0.001
2,2-DICHLOROPROPANE	<0.001
2-CHLOROTOLUENE	<0.001
4-CHLOROTOLUENE	<0.001
BENZENE	<0.0005
BROMOBENZENE	<0.001
BROMOCHLOROMETHANE	<0.001
BROMODICHLOROMETHANE	<0.001
BROMOFORM	<0.001
BROMOMETHANE	<0.001
CARBON TETRACHLORIDE	<0.0005
CHLOROBENZENE	<0.001
CHLOROETHANE	<0.001
CHLOROFORM	0.002
CHLOROMETHANE	<0.001
CIS-1,2-DICHLOROETHENE	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001
DIBROMOCHLOROMETHANE	<0.001
DIBROMOMETHANE	<0.001
DICHLORODIFLUOROMETHANE	<0.001
ETHYLBENZENE	<0.001
M-XYLENE	<0.001
O-XYLENE	<0.001
P-XYLENE	<0.001
METHYLENE CHLORIDE	<0.001
STYRENE	<0.001
TETRACHLOROETHENE	<0.0005
TOLUENE	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001
TRICHLOROETHENE	<0.0005
TRICHLOROFLUOROMETHANE	<0.001
VINYL CHLORIDE	<0.0005
-- SEMI-VOLATILE EXTRACTABLES --	
1,2,3-TRICHLOROBENZENE	<0.001
1,2,3-TRICHLOROPROPANE	<0.001
1,2,4-TRICHLOROBENZENE	<0.001
1,2,4-TRIMETHYLBENZENE	<0.001
1,2-DIBROMO-3-CHLOROPROPANE	<0.001
1,2-DICHLOROBENZENE	<0.001
1,3,5-TRIMETHYLBENZENE	<0.001
1,3-DICHLOROBENZENE	<0.001
1,3-DICHLOROPROPANE	<0.001
1,4-DICHLOROBENZENE	<0.0005
DICHLOROMONOFLUOROMETHANE	<0.001
HEXACHLOROBUTADIENE	<0.001
ISOPROPYLBENZENE	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	HL-6
SAMPLE DATE	05/06/90
SAMPLE TIME	12:00
LAB	EL
LAB NUMBER	90-10830
SAMPLE NUMBER	HL-9005-113
-- SEMI-VOLATILE EXTRACTABLES --	
N-BUTYLBENZENE	<0.001
N-PROPYLBENZENE	<0.001
NAPHTHALENE	<0.001
P-ISOPROPYLTOLUENE	<0.001
SEC-BUTYLBENZENE	<0.001
TERT-BUTYLBENZENE	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	HL-7
SAMPLE DATE	11/11/89
SAMPLE TIME	17:55
LAB	EL
LAB NUMBER	89-20182
SAMPLE NUMBER	HL-8911-003
-- PHYSICAL PARAMETERS --	
DEPTH TO WATER LEVEL (FEET)	10.41
-- VOLATILE ORGANICS --	
1,1,1,2-TETRACHLOROETHANE	<0.001
1,1,1-TRICHLOROETHANE	0.0071
1,1,2,2-TETRACHLOROETHANE	<0.001
1,1,2-TRICHLOROETHANE	<0.001
1,1-DICHLOROETHANE	0.0058
1,1-DICHLOROETHENE	<0.0005
1,1-DICHLOROPROPENE	<0.001
1,2-DIBROMOETHANE	<0.001
1,2-DICHLOROETHANE	<0.0005
1,2-DICHLOROPROPANE	<0.001
2,2-DICHLOROPROPANE	<0.001
2-CHLOROTOLUENE	<0.001
4-CHLOROTOLUENE	<0.001
BENZENE	<0.0005
BROMOBENZENE	<0.001
BROMOCHLOROMETHANE	<0.001
BROMODICHLOROMETHANE	<0.001
BROMOFORM	<0.001
BROMOMETHANE	<0.001
CARBON TETRACHLORIDE	<0.0005
CHLOROBENZENE	<0.001
CHLOROETHANE	<0.001
CHLOROFORM	0.0023
CHLOROMETHANE	<0.001
CIS-1,2-DICHLOROETHENE	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001
DIBROMOCHLOROMETHANE	<0.001
DIBROMOMETHANE	<0.001
DICHLORODIFLUOROMETHANE	0.016
ETHYLBENZENE	<0.001
M-XYLENE	<0.001
O-XYLENE	<0.001
P-XYLENE	<0.001
METHYLENE CHLORIDE	0.0017
STYRENE	<0.001
TETRACHLOROETHENE	0.0045
TOLUENE	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001
TRICHLOROETHENE	0.0035
TRICHLOROFLUOROMETHANE	<0.001
VINYL CHLORIDE	<0.0005
-- SEMI-VOLATILE EXTRACTABLES --	
1,2,3-TRICHLOROBENZENE	<0.001
1,2,3-TRICHLOROPROPANE	<0.001
1,2,4-TRICHLOROBENZENE	<0.001
1,2,4-TRIMETHYLBENZENE	<0.001
1,2-DIBROMO-3-CHLOROPROPANE	<0.001
1,2-DICHLOROBENZENE	<0.001
1,3,5-TRIMETHYLBENZENE	<0.001
1,3-DICHLOROBENZENE	<0.001
1,3-DICHLOROPROPANE	<0.001
1,4-DICHLOROBENZENE	<0.0005

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	HL-7
SAMPLE DATE	11/11/89
SAMPLE TIME	17:55
LAB	EL
LAB NUMBER	89-20182
SAMPLE NUMBER	HL-8911-003
-- SEMI-VOLATILE EXTRACTABLES --	
DICHLOROMONOFLUOROMETHANE	0.0063
HEXACHLOROBUTADIENE	<0.001
ISOPROPYLBENZENE	<0.001
N-BUTYLBENZENE	<0.001
N-PROPYLBENZENE	<0.001
NAPHTHALENE	<0.001
P-ISOPROPYLTOLUENE	<0.001
SEC-BUTYLBENZENE	<0.001
TERT-BUTYLBENZENE	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	HL-90-1	HL-90-1	HL-90-1	HL-90-1	HL-90-1	HL-90-1	HL-90-1
SAMPLE DATE	02/02/90	05/11/90	04/05/91	04/05/91	01/21/92	05/19/92	11/16/92
SAMPLE TIME	16:15	11:10	15:30	16:00	15:00	12:40	14:20
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	90-2766	90-12198	91-12771	91-12772	92-4684	92-19270	92-49143
REMARKS				DUPLICATE			
SAMPLE NUMBER	HL90-2-101	HL-9005-121	HL-9104-108	HL-9104-118	HL-9201-101	HL-9205-122	HL-9211-102
-- PHYSICAL PARAMETERS --							
DEPTH TO WATER LEVEL (FEET)	49.19		51.25	51.25	52.23	54.58	55.13
PH (FLD)						7.49	6.58
PH	7.8		7.7	7.6	7.6	7.9	7.5
SC (UMHOS/CM AT 25 C)	1100.0				1050.0	1030.0	1060.0
SC (UMHOS/CM AT 25 C) (FLD)						1017.0	1041.0
TDS (MEASURED AT 180 C)	685.0		687.0	678.0	674.0	636.0	686.0
TOTAL SUSPENDED SOLIDS					146.0	4.0	360.0
WATER TEMPERATURE (C) (FLD)					10.0	13.3	9.4
-- MAJOR CONSTITUENTS --							
TOTAL HARDNESS AS CACO3	528.0						
CALCIUM (CA) DIS	137.0		144.0	145.0	143.0	113.0	132.0
MAGNESIUM (MG) DIS	45.0		48.0	48.0	50.0	51.0	45.0
SODIUM (NA) DIS	35.0		38.0	37.0	42.0	41.0	36.0
POTASSIUM (K) DIS	3.0		5.0	4.0	6.0	3.0	3.0
TOTAL ALKALINITY AS CACO3	395.0		402.0	399.0	421.0	396.0	408.0
BICARBONATE (HCO3)	482.0		491.0	487.0	514.0	483.0	499.0
CARBONATE AS CO3	0.0		0.0	0.0	0.0	0.0	0.0
SULFATE (SO4)	132.0		140.0	141.0	139.0	165.0	120.0
CHLORIDE (CL)	31.0		33.0	33.0	33.0	33.0	29.0
-- NUTRIENTS --							
AMMONIA (NH3 AS N)			<0.1		<0.1	<0.1	<0.1
NITRATE (NO3-N)						6.86	6.94
NITRATE + NITRITE AS N	8.4		7.53		5.7		
-- METALS & MINOR CONSTITUENTS --							
ARSENIC (AS) DIS			<0.005		<0.005	<0.005	<0.005
BARIUM (BA) DIS			<0.1		<0.1	<0.1	<0.1
CADMIUM (CD) DIS	0.005		0.001		<0.001	<0.001	<0.001
CHROMIUM (CR) DIS			<0.02		<0.02	<0.01	<0.01
COPPER (CU) DIS	<0.01						
IRON (FE) DIS	<0.03		<0.03		<0.03	<0.03	<0.03
LEAD (PB) DIS	<0.01		<0.01		<0.01	<0.01	<0.01
MANGANESE (MN) DIS			<0.02		<0.02	<0.02	<0.02
MERCURY (HG) DIS			<0.001		<0.001	<0.001	<0.001
SELENIUM (SE) DIS			<0.005		<0.005	<0.005	<0.005
SILVER (AG) DIS			<0.005		<0.005	<0.005	<0.005
ZINC (ZN) DIS	0.02						
-- VOLATILE ORGANICS --							
1,1,1,2-TETRACHLOROETHANE	<0.001						
1,1,1-TRICHLOROETHANE	0.0074		0.007	0.0066	0.0056	0.0051	0.0052
1,1,2,2-TETRACHLOROETHANE	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
1,1,2-TRICHLOROETHANE	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
1,1-DICHLOROETHANE	0.0026		0.0029	0.0028	0.0032	0.0025	0.0034
1,1-DICHLOROETHENE	<0.0005		<0.0005	<0.0005	<0.0005	<0.0005	<0.001
1,1-DICHLOROPROPENE	<0.001						
1,2-DIBROMOETHANE	<0.001						
1,2-DICHLOROETHANE	0.00058		0.0005	0.0005	<0.0005	<0.0005	<0.001
1,2-DICHLOROPROPANE	<0.001						
2,2-DICHLOROPROPANE	<0.001						
2-BUTANONE (METHYL-ETHYL-KETONE)			<0.01	<0.01			
2-CHLOROETHYL VINYL ETHER			<0.01	<0.01	<0.01	<0.01	<0.001
2-CHLOROTOLUENE	<0.001						
2-HEXANONE			<0.01	<0.01			

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
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Sample Type: Monitoring Wells

SITE CODE	HL-90-1	HL-90-1	HL-90-1	HL-90-1	HL-90-1	HL-90-1	HL-90-1
SAMPLE DATE	02/02/90	05/11/90	04/05/91	04/05/91	01/21/92	05/19/92	11/16/92
SAMPLE TIME	16:15	11:10	15:30	16:00	15:00	12:40	14:20
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	90-2766	90-12198	91-12771	91-12772	92-4684	92-19270	92-49143
REMARKS				DUPLICATE			
SAMPLE NUMBER	HL90-2-101	HL-9005-121	HL-9104-108	HL-9104-118	HL-9201-101	HL-9205-122	HL-9211-102
-- VOLATILE ORGANICS --							
4-BROMOFLUOROBENZENE			<0.01	<0.01	<0.01	<0.01	<0.01
4-CHLOROTOLUENE	<0.001						
4-METHYL-2-PENTANONE			<0.01	<0.01			
ACETONE			<0.01	<0.01			
ACROLEIN			<0.01	<0.01			
ACRYLONITRILE			<0.01	<0.01			
BENZENE	<0.0005		<0.0005	<0.0005	<0.0005	<0.0005	<0.001
BROMOBENZENE	<0.001						
BROMOCHLOROMETHANE	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
BROMODICHLOROMETHANE	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
BROMOFORM	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
BROMOMETHANE	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
CARBON DISULFIDE			<0.01	<0.01			
CARBON TETRACHLORIDE	<0.0005		<0.0005	<0.0005	<0.0005	<0.0005	<0.001
CHLOROBENZENE	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROETHANE	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROFORM	0.0035		0.0041	0.0039	0.0043	0.0038	0.0055
CHLOROMETHANE	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
CIS-1,2-DICHLOROETHENE	<0.001						
CIS-1,3-DICHLOROPROPENE	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
DIBROMOCHLOROMETHANE	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
DIBROMOMETHANE	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
DICHLORODIFLUOROMETHANE	0.015		0.0089	0.0088	0.0054	0.0091	0.0036
ETHANOL			<0.01	<0.01			
ETHYL METHACRYLATE			<0.01	<0.01	<0.01	<0.01	<0.001
ETHYLBENZENE	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
IODOMETHANE			<0.01	<0.01	<0.01	<0.01	<0.001
TOTAL XYLENE			<0.001	<0.001	<0.001	<0.001	<0.001
M-XYLENE	<0.001						
O-XYLENE	<0.001						
P-XYLENE	<0.001						
METHYLENE CHLORIDE	0.0036		0.0036	0.0035	0.005	0.0029	0.0014
STYRENE	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
TETRACHLOROETHENE	0.013		0.012	0.013	0.016	0.014	0.017
TOLUENE	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
TRICHLOROETHENE	0.0015		0.0022	0.0022	0.0022	0.0021	0.0023
TRICHLOROFLUOROMETHANE	<0.001		0.0028	0.0026	0.0031	0.002	<0.001
VINYL ACETATE			<0.01	<0.01	<0.01	<0.01	<0.02
VINYL CHLORIDE	<0.0005		<0.0005	<0.0005	<0.0005	<0.0005	<0.001
-- SEMI-VOLATILE EXTRACTABLES --							
1,2,3-TRICHLOROBENZENE	<0.001						
1,2,3-TRICHLOROPROPANE	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
1,2,4-TRICHLOROBENZENE	<0.001	<0.01					
1,2,4-TRIMETHYLBENZENE	<0.001						
1,2-DIBROMO-3-CHLOROPROPANE	<0.001						
1,2-DICHLOROBENZENE	<0.001	<0.01					
1,3,5-TRIMETHYLBENZENE	<0.001						
1,3-DICHLOROBENZENE	<0.001	<0.01					
1,3-DICHLOROPROPANE	<0.001						
1,4-DICHLORO-2-BUTENE			<0.01	<0.01			
1,4-DICHLOROBENZENE	<0.0005	<0.01					
1,4-DIFLUOROBENZENE			<0.01	<0.01	<0.01	<0.01	<0.001
2-METHYL-4 6-DINITROPHENOL		<0.05					

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	HL-90-1	HL-90-1	HL-90-1	HL-90-1	HL-90-1	HL-90-1	HL-90-1
SAMPLE DATE	02/02/90	05/11/90	04/05/91	04/05/91	01/21/92	05/19/92	11/16/92
SAMPLE TIME	16:15	11:10	15:30	16:00	15:00	12:40	14:20
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	90-2766	90-12198	91-12771	91-12772	92-4684	92-19270	92-49143
REMARKS				DUPLICATE			
SAMPLE NUMBER	HL90-2-101	HL-9005-121	HL-9104-108	HL-9104-118	HL-9201-101	HL-9205-122	HL-9211-102
-- SEMI-VOLATILE EXTRACTABLES --							
2,4,6-TRICHLOROPHENOL		<0.01					
2,4-DICHLOROPHENOL		<0.01					
2,4-DIMETHYLPHENOL		<0.01					
2,4-DINITROPHENOL		<0.05					
2,4-DINITROTOLUENE		<0.01					
2,6-DINITROTOLUENE		<0.01					
2-CHLORONAPHTHALENE		<0.01					
2-CHLOROPHENOL		<0.01					
2-NITROPHENOL		<0.01					
3,3-DICHLOROBENZIDINE		<0.01					
4-BROMOPHENYL PHENYL ETHER		<0.01					
4-CHLORO-3-METHYLPHENOL		<0.01					
4-CHLOROPHENYL PHENYL ETHER		<0.01					
4-NITROPHENOL		<0.05					
ACENAPHTHENE		<0.01					
ACENAPHTHYLENE		<0.01					
ANTHRACENE		<0.01					
1,2-DIPHENYLHYDRAZINE (AZOBENZENE)		<0.01					
BENZIDINE		<0.01					
BENZO (A) ANTHRACENE		<0.01					
BENZO (A) PYRENE		<0.01					
BENZO (B) FLUORANTHENE		<0.01					
BENZO (GHI) PERYLENE		<0.01					
BENZO (K) FLUORANTHENE		<0.01					
BIS (2-CHLOROETHOXY) METHANE		<0.01					
BIS (2-CHLOROETHYL) ETHER		<0.01					
BIS (2-CHLOROISOPROPYL) ETHER		<0.01					
BIS (2-ETHYLHEXYL) PHTHALATE		<0.01					
BUTYL BENZYL PHTHALATE		<0.01					
CHRYSENE		<0.01					
DI-N-BUTYLPHTHALATE		<0.01					
DI-N-OCTYLPHTHALATE		<0.01					
DIBENZO (A,H) ANTHRACENE		<0.01					
DICHLOROMONOFLUOROMETHANE	0.0069						
DIETHYLPHTHALATE		<0.01					
DIMETHYLPHTHALATE		<0.01					
FLUORANTHENE		<0.01					
FLUORENE		<0.01					
HEXACHLOROBENZENE		<0.01					
HEXACHLOROBUTADIENE	<0.001	<0.01					
HEXACHLOROETHANE		<0.01					
INDENO (1,2,3-CD) PYRENE		<0.01					
ISOPHORONE		<0.01					
ISOPROPYLBENZENE	<0.001						
N-BUTYLBENZENE	<0.001						
N-NITROSO-DI-N-PROPYLAMINE		<0.01					
N-NITROSOPHENYLAMINE		<0.01					
N-PROPYLBENZENE	<0.001						
NAPHTHALENE	<0.001	<0.01					
NITROBENZENE		<0.01					
P-ISOPROPYLTOLUENE	<0.001						
PENTACHLOROPHENOL		<0.05					
PHENANTHRENE		<0.01					
PHENOL		<0.01					
PYRENE		<0.01					
SEC-BUTYLBENZENE	<0.001						

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TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	HL-90-1	HL-90-1	HL-90-1	HL-90-1	HL-90-1	HL-90-1	HL-90-1
SAMPLE DATE	02/02/90	05/11/90	04/05/91	04/05/91	01/21/92	05/19/92	11/16/92
SAMPLE TIME	16:15	11:10	15:30	16:00	15:00	12:40	14:20
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	90-2766	90-12198	91-12771	91-12772	92-4684	92-19270	92-49143
REMARKS				DUPLICATE			
SAMPLE NUMBER	HL90-2-101	HL-9005-121	HL-9104-108	HL-9104-118	HL-9201-101	HL-9205-122	HL-9211-102
-- SEMI-VOLATILE EXTRACTABLES --							
TERT-BUTYLBENZENE	<0.001						
-- HYDROCARBONS --							
TOTAL ORGANIC CARBON			<2.0				
-- OTHER PARAMETERS --							
CYANIDE (CN) TOT			<0.005		<0.005	<0.005	<0.005
CHEMICAL OXYGEN DEMAND			2.0		4.0	5.0	9.0

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TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	HL-90-1	HL-90-1	HL-90-1	HL-90-1	HL-90-1	HL-90-1
SAMPLE DATE	05/22/93	05/22/93	12/15/93	04/08/94	08/24/94	11/18/94
SAMPLE TIME	17:10	15:15	12:45	14:50	10:50	15:30
LAB	EL	EL	EL	EL	EL	EL
LAB NUMBER	93-20280	93-20282	93-59622	94-13573	94-40099	94-58156
REMARKS		DUPLICATE				
SAMPLE NUMBER	HL-9305-102	HL-9305-112	HL-9312-102	HL-9404-102	HL-9408-101	HL-9411-103
-- PHYSICAL PARAMETERS --						
DEPTH TO WATER LEVEL (FEET)	50.48	50.48	46.82	47.65	55.51	52.67
PH (FLD)	7.58	7.58	7.23	7.64	7.46	7.46
PH	7.7	7.4	7.3			7.3
SC (UMHOS/CM AT 25 C)	1020.0	1010.0	1070.0			1050.0
SC (UMHOS/CM AT 25 C) (FLD)	1015.0	1015.0	1022.0	1017.0	1022.0	1035.0
TDS (MEASURED AT 180 C)	643.0	650.0				
TOTAL SUSPENDED SOLIDS	138.0	214.0				
WATER TEMPERATURE (C) (FLD)	11.2	11.2	6.9	9.9	11.7	8.9
-- MAJOR CONSTITUENTS --						
CALCIUM (CA) DIS	116.0	119.0				
MAGNESIUM (MG) DIS	44.0	44.0				
SODIUM (NA) DIS	38.0	37.0				
POTASSIUM (K) DIS	4.0	4.0				
TOTAL ALKALINITY AS CACO3	361.0	361.0				
BICARBONATE (HCO3)	441.0	440.0				
CARBONATE AS CO3	0.0	0.0				
SULFATE (SO4)	129.0	129.0	137.0			122.0
CHLORIDE (CL)	31.0	31.0	35.0			29.0
-- NUTRIENTS --						
AMMONIA (NH3 AS N)	<0.1	<0.1				
NITRATE (NO3-N)	7.16	7.09	6.13			
NITRATE + NITRITE AS N						6.65
-- METALS & MINOR CONSTITUENTS --						
ANTIMONY (SB) DIS			<0.05	<0.05		<0.05
ARSENIC (AS) DIS	<0.005	<0.005	<0.005	<0.005		<0.005
BARIUM (BA) DIS	<0.1	<0.1	<0.1	<0.1		<0.1
BERYLLIUM (BE) DIS			<0.001	<0.001		<0.001
CADMIUM (CD) DIS	<0.001	<0.001	<0.001	<0.001		<0.001
CHROMIUM (CR) DIS	<0.01	<0.01	<0.01	<0.01		<0.01
COBALT (CO) DIS			<0.01	<0.01		<0.01
COPPER (CU) DIS			<0.01	<0.01		<0.01
IRON (FE) DIS	<0.03	<0.03	<0.03			<0.03
LEAD (PB) DIS	0.02	<0.01	<0.01	<0.01		<0.01
MANGANESE (MN) DIS	<0.01	<0.01				
MERCURY (HG) DIS	<0.001	<0.001	<0.001	<0.001		<0.001
NICKEL (NI) DIS			<0.01	<0.01		<0.01
SELENIUM (SE) DIS	<0.005	<0.005	<0.005	<0.005		<0.005
SILVER (AG) DIS	<0.005	<0.005	<0.005	<0.005		<0.005
THALLIUM (TL) DIS			<0.1	<0.1		<0.1
TIN (SN) DIS				<0.1		
VANADIUM (V) DIS			<0.1	<0.1		<0.1
ZINC (ZN) DIS			0.08	0.09		<0.01
-- VOLATILE ORGANICS --						
ACETONITRILE METHYLCYANIDE				<0.02		
ALLYLCHLORIDE 3-CHLORO-1-PROPENE				<0.001		
1,1,1,2-TETRACHLOROETHANE			<0.001	<0.001	<0.001	<0.001
1,1,1-TRICHLOROETHANE	0.004	0.0038	0.0025	<0.001	0.0038	0.0041
1,1,2,2-TETRACHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,2-TRICHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-DICHLOROETHANE	0.0027	0.0027	0.0017	0.0024	0.0024	0.0028
1,1-DICHLOROETHENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-DICHLOROPROPENE				<0.001		

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Sample Type: Monitoring Wells

SITE CODE	HL-90-1	HL-90-1	HL-90-1	HL-90-1	HL-90-1	HL-90-1
SAMPLE DATE	05/22/93	05/22/93	12/15/93	04/08/94	08/24/94	11/18/94
SAMPLE TIME	17:10	15:15	12:45	14:50	10:50	15:30
LAB	EL	EL	EL	EL	EL	EL
LAB NUMBER	93-20280	93-20282	93-59622	94-13573	94-40099	94-58156
REMARKS		DUPLICATE				
SAMPLE NUMBER	HL-9305-102	HL-9305-112	HL-9312-102	HL-9404-102	HL-9408-101	HL-9411-103
-- VOLATILE ORGANICS --						
1,2-DIBROMOETHANE			<0.001	<0.001	<0.001	<0.001
1,2-DICHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-DICHLOROPROPANE			<0.001	<0.001	<0.001	<0.001
2,2-DICHLOROPROPANE				<0.001		
2-CHLOROETHYL VINYL ETHER	<0.001	<0.001				
2-HEXANONE			<0.02	<0.02	<0.02	<0.02
4-BROMOFLUOROBENZENE	<0.01	<0.01				
ACETONE			<0.02	<0.05	<0.05	<0.05
ACROLEIN				<0.02		
ACRYLONITRILE			<0.02	<0.02	<0.02	<0.02
BENZENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMOCHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMODICHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMOFORM	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMOMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CARBON DISULFIDE			<0.001	<0.001	<0.001	<0.001
CARBON TETRACHLORIDE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROBENZENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROFORM	0.0043	0.0044	0.0034	0.0035	0.0032	0.0035
CHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROPRENE 2-CHLORO-1,3-BUTADIENE				<0.001		
CIS-1,2-DICHLOROETHENE			<0.001	<0.001	<0.001	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DIBROMOCHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DIBROMOMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DICHLORODIFLUOROMETHANE	0.003	0.0032	0.0015	0.0024	0.0028	0.0038
ETHYL METHACRYLATE	<0.001	<0.001		<0.001		
ETHYLBENZENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
IODOMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
ISOBUTANOL				<0.05		
TOTAL XYLENE	<0.001	<0.001				
M-P XYLENE			<0.001			
O-XYLENE			<0.001	<0.001	<0.001	<0.001
METHACRYLONITRILE				<0.02		
METHYL ETHYL KETONE				<0.02	<0.02	
METHYL ETHYL KETONE			<0.02			<0.02
METHYL ISOBUTL KETONE			<0.02	<0.02	<0.02	<0.02
METHYL METHACRYLATE				<0.002		
METHYLENE CHLORIDE	0.0018	0.0019	0.0015	0.0021	<0.001	<0.001
PROPIONITRILE ETHYLCYANIDE				<0.02		
STYRENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TETRACHLOROETHENE	0.013	0.013	0.018	0.01	0.02	0.015
TOLUENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRICHLOROETHENE	0.0019	0.002	0.0013	0.0015	0.002	0.0018
TRICHLOROFLUOROMETHANE	0.002	0.0019	<0.001	0.0011	0.0014	0.0014
VINYL ACETATE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
VINYL CHLORIDE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
PICLORAM				<0.0005		
-- SEMI-VOLATILE EXTRACTABLES --						
ALPHA-CHLORDANE				<0.00005		
1,4-BENZENEDIAMINE				ND		
CHLOROBENZILATE				<0.01		

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Sample Type: Monitoring Wells

SITE CODE	HL-90-1	HL-90-1	HL-90-1	HL-90-1	HL-90-1	HL-90-1
SAMPLE DATE	05/22/93	05/22/93	12/15/93	04/08/94	08/24/94	11/18/94
SAMPLE TIME	17:10	15:15	12:45	14:50	10:50	15:30
LAB	EL	EL	EL	EL	EL	EL
LAB NUMBER	93-20280	93-20282	93-59622	94-13573	94-40099	94-58156
REMARKS		DUPLICATE				
SAMPLE NUMBER	HL-9305-102	HL-9305-112	HL-9312-102	HL-9404-102	HL-9408-101	HL-9411-103
-- SEMI-VOLATILE EXTRACTABLES --						
1,2,3-TRICHLOROPROPANE	<0.001	<0.001	<0.001	<0.001	<0.001	
1,2,4,5-TETRACHLOROBENZENE				<0.01		
1,2,4-TRICHLOROBENZENE				<0.001		
1,2-DIBROMO-3-CHLOROPROPANE			<0.001	<0.001	<0.001	<0.001
1,2-DICHLOROBENZENE			<0.001	<0.001	<0.001	<0.001
1,3,5-TRINITROBENZENE				<0.01		
1,3-DICHLOROBENZENE				<0.001		
1,3-DICHLOROPROPANE				<0.001		
1,3-DINITROBENZENE				<0.01		
TRANS-1,4-DICHLORO-2-BUTENE			<0.002		<0.002	<0.002
1,4-DICHLORO-2-BUTENE				<0.002		
1,4-DICHLOROBENZENE			<0.001	<0.001	<0.001	<0.001
1,4-DIFLUOROBENZENE	<0.001	<0.001				
METHAPYRILENE				ND		
1-METHYLNAPHTHALENE				<0.01		
1-NAPHTHYLAMINE				<0.01		
2,3,4,6-TETRACHLOROPHENOL				<0.01		
2,4,5-TRICHLOROPHENOL				<0.01		
2,4,6-TRICHLOROPHENOL				<0.01		
2,4-DICHLOROPHENOL				<0.01		
2,4-DIMETHYLPHENOL				<0.01		
2,4-DINITROPHENOL				<0.05		
2,4-DINITROTOLUENE				<0.01		
2,6-DICHLOROPHENOL				<0.01		
2,6-DINITROTOLUENE				<0.01		
2-CHLORONAPHTHALENE				<0.01		
2-CHLOROPHENOL				<0.01		
2-METHYLNAPHTHALENE				<0.01		
2-METHYLPHENOL (O-CRESOL)				<0.01		
2-NAPHTHYLAMINE				<0.01		
2-NITROANILINE				<0.01		
2-NITROPHENOL				<0.01		
2-PICOLINE				<0.01		
3,3-DICHLOROBENZIDINE				<0.02		
3-METHYLCHOLANTHRENE				<0.1		
3-NITROANILINE				<0.01		
4,6-DINITRO-2-METHYLPHENOL				<0.05		
4-AMINOBIPHENYL				<0.01		
4-BROMOPHENYL PHENYL ETHER				<0.01		
4-CHLORO-3-METHYLPHENOL				<0.01		
4-CHLORO-2-METHYLPHENOL				<0.01		
4-CHLOROPHENOL				<0.01		
4-CHLOROPHENYL PHENYL ETHER				<0.01		
4-METHYLPHENOL/3-METHYLPHENOL				<0.01		
4-NITROANILINE				<0.01		
4-NITROPHENOL				<0.0005		
7,12-DIMETHYLBENZENE (A) ANTHRACENE				<0.01		
A,A-DIMETHYLPHENETHYLAMINE				ND		
ACENAPHTHENE				<0.01		
ACENAPHTHYLENE				<0.01		
ACETOPHENONE				<0.01		
ANILINE				<0.01		
ANTHRACENE				<0.01		
ARAMITE				<0.01		
1,2-DIPHENYLHYDRAZINE (AZOBENZENE)				<0.01		
BENZIDINE				<0.02		

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TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	HL-90-1	HL-90-1	HL-90-1	HL-90-1	HL-90-1	HL-90-1
SAMPLE DATE	05/22/93	05/22/93	12/15/93	04/08/94	08/24/94	11/18/94
SAMPLE TIME	17:10	15:15	12:45	14:50	10:50	15:30
LAB	EL	EL	EL	EL	EL	EL
LAB NUMBER	93-20280	93-20282	93-59622	94-13573	94-40099	94-58156
REMARKS		DUPLICATE				
SAMPLE NUMBER	HL-9305-102	HL-9305-112	HL-9312-102	HL-9404-102	HL-9408-101	HL-9411-103
-- SEMI-VOLATILE EXTRACTABLES --						
BENZO (A) ANTHRACENE				<0.01		
BENZO (A) PYRENE				<0.01		
BENZO (B) FLUORANTHENE				<0.01		
BENZO (GHI) PERYLENE				<0.01		
BENZO (K) FLUORANTHENE				<0.01		
BENZYL ALCOHOL				<0.01		
BIS (2-CHLOROETHOXY) METHANE				<0.01		
BIS (2-CHLOROETHYL) ETHER				<0.01		
BIS (2-CHLOROISOPROPYL) ETHER				<0.01		
BIS (2-ETHYLHEXYL) PHTHALATE				<0.01		
BUTYL BENZYL PHTHALATE				<0.01		
CHRYSENE				<0.01		
DI-N-BUTYLPHTHALATE				<0.01		
DI-N-OCTYLPHTHALATE				<0.01		
DIBENZO (A,H) ANTHRACENE				<0.01		
DIBENZOFURAN				<0.01		
DIETHYLPHTHALATE				<0.01		
3,3'-DIMETHYLBENZIDINE				<0.01		
DIMETHYLPHTHALATE				<0.01		
DINOSEB				<0.001		
DIPHENYLAMINE				<0.01		
ETHYL METHANESULFONATE				<0.01		
FAMPHUR				<0.01		
FLUORANTHENE				<0.01		
FLUORENE				<0.01		
2-ACETYL AMINO FLUORENE				<0.01		
HEXACHLOROBENZENE				<0.01		
HEXACHLOROBUTADIENE				<0.001		
HEXACHLOROCYCLOPENTADIENE				<0.01		
HEXACHLOROETHANE				<0.01		
HEXACHLOROPHENE				ND		
HEXACHLOROPHROPENE				<0.01		
INDENO (1,2,3-CD) PYRENE				<0.01		
ISODRIN				<0.0001		
ISOPHORONE				<0.01		
KEPONE				<0.001		
ISOSAFROLE				<0.01		
METHYL METHANESULFONATE				<0.01		
5-NITRO-O-TOLUIDINE				<0.01		
N-NITROSO-DI-N-BUTYLAMINE				<0.01		
N-NITROSO-DI-N-PROPYLAMINE				<0.01		
N-NITROSODIMETHYLAMINE				<0.01		
N-NITROSODIPHENYLAMINE				<0.01		
N-NITROSOPIPERIDINE				<0.01		
N-NITROSODIETHYLAMINE				<0.01		
N-NITROSOPYRROLIDINE				<0.01		
O-TOLUIDINE				<0.01		
N-NITROSOMORPHOLINE				<0.01		
N-NITROSOMETHYLETHYLAMINE				<0.01		
NAPHTHALENE			<0.001	<0.001		
NITROBENZENE				<0.01		
4-NITROQUINOLINE-N-OXIDE				<0.1		
P-CHLOROTOLUENE				<0.01		
P-CHLOROANILINE				<0.01		
P-DIMETHYLAMINOAZOBENZENE				<0.01		
1,4-NAPHTHOQUINONE				<0.1		

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TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	HL-90-1	HL-90-1	HL-90-1	HL-90-1	HL-90-1	HL-90-1
SAMPLE DATE	05/22/93	05/22/93	12/15/93	04/08/94	08/24/94	11/18/94
SAMPLE TIME	17:10	15:15	12:45	14:50	10:50	15:30
LAB	EL	EL	EL	EL	EL	EL
LAB NUMBER	93-20280	93-20282	93-59622	94-13573	94-40099	94-58156
REMARKS		DUPLICATE				
SAMPLE NUMBER	HL-9305-102	HL-9305-112	HL-9312-102	HL-9404-102	HL-9408-101	HL-9411-103
-- SEMI-VOLATILE EXTRACTABLES --						
PARATHION				<0.01		
PENTACHLOROBENZENE				<0.01		
PENTACHLORONITROBENZENE				<0.01		
PENTACHLOROPHENOL				<0.00005		
PHENACETIN				<0.01		
PHENANTHRENE				<0.01		
PHENOL				<0.01		
O,O,O-TRIETHYLPHOSPHOROTHIOATE				<0.01		
PYRENE				<0.01		
PYRIDINE				<0.02		
SAFROLE				<0.01		
THIONAZIN				<0.01		
-- HYDROCARBONS --						
M+P-XYLENE				<0.001		
M+P-XYLENE					<0.001	<0.001
ACIFLOURFEN				<0.0005		
BENTAZON				<0.0025		
CHLORAMBEN				<0.0005		
DACTHAL				<0.001		
DALAPON				<0.01		
DICAMBA				<0.00025		
DICHLORPROP				<0.001		
AROCLOR 1016				<0.001		
AROCLOR 1221				<0.002		
AROCLOR 1232				<0.001		
AROCLOR 1242				<0.001		
AROCLOR 1248				<0.001		
AROCLOR 1254				<0.001		
AROCLOR 1260				<0.001		
AROCLOR 1262				<0.001		
AROCLOR 1268				<0.001		
2,4-D				<0.001		
2,4-DB				<0.0025		
DIALLATE (AVADEX)				<0.01		
3,5-DICHLOROBEZOIC ACID				<0.0005		
DIMETHOATE (CYGON)				<0.1		
DISULFOTON				<0.01		
MCPA				<0.2		
MCPP				<0.2		
METHYL PARATHION (PENNCAP-M)				<0.01		
PHORATE (THIMET)				<0.01		
SULFOTEP				<0.01		
2,4,5-T				<0.0002		
2,4,5-TP (SILVEX)				<0.0002		
-- OTHER PARAMETERS --						
4;4'-DDD				<0.0001		
4;4'-DDE				<0.0001		
4;4'-DDT				<0.0001		
ALDRIN				<0.00005		
ALPHA-BHC				<0.00005		
BETA-BHC				<0.00005		
GAMMA-CHLORDANE				<0.00005		
CYANIDE (CN) TOT	<0.005	<0.005	<0.005	<0.005		<0.005
DELTA-BHC				<0.00005		

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TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	HL-90-1	HL-90-1	HL-90-1	HL-90-1	HL-90-1	HL-90-1
SAMPLE DATE	05/22/93	05/22/93	12/15/93	04/08/94	08/24/94	11/18/94
SAMPLE TIME	17:10	15:15	12:45	14:50	10:50	15:30
LAB	EL	EL	EL	EL	EL	EL
LAB NUMBER	93-20280	93-20282	93-59622	94-13573	94-40099	94-58156
REMARKS		DUPLICATE				
SAMPLE NUMBER	HL-9305-102	HL-9305-112	HL-9312-102	HL-9404-102	HL-9408-101	HL-9411-103
-- OTHER PARAMETERS --						
DIELDRIN				<0.0001		
ENDOSULFAN I				<0.00005		
ENDOSULFAN II				<0.0001		
ENDOSULFAN SULFATE				<0.0001		
ENDRIN				<0.0001		
ENDRIN ALDEHYDE				<0.0001		
ENDRIN KETONE				<0.0001		
GAMMA-BHC(LINDANE)				<0.00005		
HEPTACHLOR				<0.00005		
HEPTACHLOR EPOXIDE				<0.00005		
METHOXYCHLOR				<0.0005		
PRONAMIDE				<0.01		
SULFIDE AS S				<0.04		
CHEMICAL OXYGEN DEMAND	<1.0	<1.0	<1.0			4.0
TOXAPHENE				<0.005		

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Sample Type: Monitoring Wells

SITE CODE	HL-90-2	HL-90-2	HL-90-2	HL-90-2	HL-90-2	HL-90-2	HL-90-2
SAMPLE DATE	02/03/90	05/10/90	04/04/91	01/22/92	05/19/92	05/19/92	11/16/92
SAMPLE TIME	12:45	16:40	16:00	11:30	15:00	15:30	15:55
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	90-2767	90-12197	91-12767	92-4686	92-19272	92-19273	92-49145
REMARKS						DUPLICATE	
SAMPLE NUMBER	HL90-2-102	HL-9005-120	HL-9104-104	HL-9201-104	HL-9205-101	HL-9205-119	HL-9211-104
-- PHYSICAL PARAMETERS --							
DEPTH TO WATER LEVEL (FEET)	46.15		47.55	56.55	50.15	50.15	48.54
PH (FLD)					7.7	7.7	7.09
PH	7.9		7.8	7.8	8.1	8.0	7.8
SC (UMHOS/CM AT 25 C)	877.0			815.0	841.0	826.0	796.0
SC (UMHOS/CM AT 25 C) (FLD)					830.0	830.0	818.0
TDS (MEASURED AT 180 C)	511.0		489.0	467.0	496.0	491.0	485.0
TOTAL SUSPENDED SOLIDS				146.0	4.0	4.0	32.0
WATER TEMPERATURE (C) (FLD)				9.0	11.3	11.3	8.7
-- MAJOR CONSTITUENTS --							
TOTAL HARDNESS AS CACO3	444.0						
CALCIUM (CA) DIS	121.0		116.0	110.0	102.0	101.0	104.0
MAGNESIUM (MG) DIS	35.0		33.0	36.0	36.0	37.0	30.0
SODIUM (NA) DIS	23.0		25.0	28.0	27.0	28.0	24.0
POTASSIUM (K) DIS	3.0		3.0	5.0	4.0	3.0	3.0
TOTAL ALKALINITY AS CACO3	367.0		351.0	350.0	364.0	357.0	344.0
BICARBONATE (HCO3)	448.0		428.0	427.0	444.0	436.0	420.0
CARBONATE AS CO3	0.0		0.0	0.0	0.0	0.0	0.0
SULFATE (SO4)	62.0		61.0	60.0	75.0	76.0	67.0
CHLORIDE (CL)	32.0		31.0	36.0	31.0	31.0	29.0
-- NUTRIENTS --							
AMMONIA (NH3 AS N)			<0.1	<0.1	<0.1	<0.1	0.1
NITRATE (NO3-N)					1.0	1.01	1.03
NITRATE + NITRITE AS N	0.9		0.83	0.96			
-- METALS & MINOR CONSTITUENTS --							
ARSENIC (AS) DIS			<0.005	<0.005	<0.005	<0.005	<0.005
BARIUM (BA) DIS			<0.1	<0.1	<0.1	<0.1	<0.1
CADMIUM (CD) DIS	0.005		0.001	<0.001	<0.001	<0.001	<0.001
CHROMIUM (CR) DIS			<0.02	<0.02	<0.01	<0.01	<0.01
COPPER (CU) DIS	<0.01						
IRON (FE) DIS	0.06		0.12	0.07	0.11	0.11	0.12
LEAD (PB) DIS	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01
MANGANESE (MN) DIS			<0.02	<0.02	<0.02	<0.02	<0.02
MERCURY (HG) DIS			<0.001	<0.001	<0.001	<0.001	<0.001
SELENIUM (SE) DIS			<0.005	<0.005	<0.005	<0.005	<0.005
SILVER (AG) DIS			<0.005	<0.005	<0.005	<0.005	<0.005
ZINC (ZN) DIS	0.02						
-- VOLATILE ORGANICS --							
1,1,1,2-TETRACHLOROETHANE	<0.001						
1,1,1-TRICHLOROETHANE	0.002		0.001	0.00078	0.00099	0.00089	<0.001
1,1,2,2-TETRACHLOROETHANE	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
1,1,2-TRICHLOROETHANE	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
1,1-DICHLOROETHANE	0.0029		0.0022	0.0021	0.0022	0.002	0.0023
1,1-DICHLOROETHENE	<0.0005		<0.0005	<0.0005	<0.0005	<0.0005	<0.001
1,1-DICHLOROPROPENE	<0.001						
1,2-DIBROMOETHANE	<0.001						
1,2-DICHLOROETHANE	<0.0005		<0.0005	<0.0005	<0.0005	<0.0005	<0.001
1,2-DICHLOROPROPANE	<0.001						
2,2-DICHLOROPROPANE	<0.001						
2-BUTANONE (METHYL-ETHYL-KETONE)			<0.01				
2-CHLOROETHYL VINYL ETHER			<0.01	<0.01	<0.01	<0.01	<0.001
2-CHLOROTOLUENE	<0.001						
2-HEXANONE			<0.01				

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Sample Type: Monitoring Wells

SITE CODE	HL-90-2	HL-90-2	HL-90-2	HL-90-2	HL-90-2	HL-90-2	HL-90-2
SAMPLE DATE	02/03/90	05/10/90	04/04/91	01/22/92	05/19/92	05/19/92	11/16/92
SAMPLE TIME	12:45	16:40	16:00	11:30	15:00	15:30	15:55
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	90-2767	90-12197	91-12767	92-4686	92-19272	92-19273	92-49145
REMARKS						DUPLICATE	
SAMPLE NUMBER	HL90-2-102	HL-9005-120	HL-9104-104	HL-9201-104	HL-9205-101	HL-9205-119	HL-9211-104
-- VOLATILE ORGANICS --							
4-BROMOFLUOROBENZENE			<0.01	<0.01	<0.01	<0.01	<0.01
4-CHLOROTOLUENE	<0.001						
4-METHYL-2-PENTANONE			<0.01				
ACETONE			<0.01				
ACROLEIN			<0.01				
ACRYLONITRILE			<0.01				
BENZENE	<0.0005		<0.0005	<0.0005	<0.0005	<0.0005	<0.001
BROMOBENZENE	<0.001						
BROMOCHLOROMETHANE	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
BROMODICHLOROMETHANE	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
BROMOFORM	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
BROMOMETHANE	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
CARBON DISULFIDE			<0.01				
CARBON TETRACHLORIDE	<0.0005		<0.0005	<0.0005	<0.0005	<0.0005	<0.001
CHLOROBENZENE	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROETHANE	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROFORM	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROMETHANE	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
CIS-1,2-DICHLOROETHENE	<0.001						
CIS-1,3-DICHLOROPROPENE	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
DIBROMOCHLOROMETHANE	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
DIBROMOMETHANE	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
DICHLORODIFLUOROMETHANE	0.0056		<0.001	<0.001	0.0018	0.0017	<0.001
ETHANOL			<0.01				
ETHYL METHACRYLATE			<0.01	<0.01	<0.01	<0.01	<0.001
ETHYLBENZENE	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
IODOMETHANE			<0.01	<0.01	<0.01	<0.01	<0.001
TOTAL XYLENE			<0.001	<0.001	<0.001	<0.001	<0.001
M-XYLENE	<0.001						
O-XYLENE	<0.001						
P-XYLENE	<0.001						
METHYLENE CHLORIDE	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
STYRENE	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
TETRACHLOROETHENE	<0.0005		<0.0005	<0.0005	<0.0005	<0.0005	<0.001
TOLUENE	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
TRICHLOROETHENE	<0.0005		<0.0005	<0.0005	<0.0005	<0.0005	<0.001
TRICHLOROFLUOROMETHANE	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
VINYL ACETATE			<0.01	<0.01	<0.01	<0.01	<0.02
VINYL CHLORIDE	<0.0005		<0.0005	<0.0005	<0.0005	<0.0005	<0.001
-- SEMI-VOLATILE EXTRACTABLES --							
1,2,3-TRICHLOROBENZENE	<0.001						
1,2,3-TRICHLOROPROPANE	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
1,2,4-TRICHLOROBENZENE	<0.001	<0.01					
1,2,4-TRIMETHYLBENZENE	<0.001						
1,2-DIBROMO-3-CHLOROPROPANE	<0.001						
1,2-DICHLOROBENZENE	<0.001	<0.01					
1,3,5-TRIMETHYLBENZENE	<0.001						
1,3-DICHLOROBENZENE	<0.001	<0.01					
1,3-DICHLOROPROPANE	<0.001						
1,4-DICHLORO-2-BUTENE			<0.01				
1,4-DICHLOROBENZENE	<0.0005	<0.01					
1,4-DIFLUOROBENZENE			<0.01	<0.01	<0.01	<0.01	<0.001
2-METHYL-4 6-DINITROPHENOL		<0.05					

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Sample Type: Monitoring Wells

SITE CODE	HL-90-2	HL-90-2	HL-90-2	HL-90-2	HL-90-2	HL-90-2	HL-90-2
SAMPLE DATE	02/03/90	05/10/90	04/04/91	01/22/92	05/19/92	05/19/92	11/16/92
SAMPLE TIME	12:45	16:40	16:00	11:30	15:00	15:30	15:55
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	90-2767	90-12197	91-12767	92-4686	92-19272	92-19273	92-49145
REMARKS						DUPLICATE	
SAMPLE NUMBER	HL90-2-102	HL-9005-120	HL-9104-104	HL-9201-104	HL-9205-101	HL-9205-119	HL-9211-104
-- SEMI-VOLATILE EXTRACTABLES --							
2,4,6-TRICHLOROPHENOL		<0.01					
2,4-DICHLOROPHENOL		<0.01					
2,4-DIMETHYLPHENOL		<0.01					
2,4-DINITROPHENOL		<0.05					
2,4-DINITROTOLUENE		<0.01					
2,6-DINITROTOLUENE		<0.01					
2-CHLORONAPHTHALENE		<0.01					
2-CHLOROPHENOL		<0.01					
2-NITROPHENOL		<0.01					
3,3-DICHLOROBENZIDINE		<0.01					
4-BROMOPHENYL PHENYL ETHER		<0.01					
4-CHLORO-3-METHYLPHENOL		<0.01					
4-CHLOROPHENYL PHENYL ETHER		<0.01					
4-NITROPHENOL		<0.05					
ACENAPHTHENE		<0.01					
ACENAPHTHYLENE		<0.01					
ANTHRACENE		<0.01					
1,2-DIPHENYLHYDRAZINE (AZOBENZENE)		<0.01					
BENZIDINE		<0.01					
BENZO (A) ANTHRACENE		<0.01					
BENZO (A) PYRENE		<0.01					
BENZO (B) FLUORANTHENE		<0.01					
BENZO (GHI) PERYLENE		<0.01					
BENZO (K) FLUORANTHENE		<0.01					
BIS (2-CHLOROETHOXY) METHANE		<0.01					
BIS (2-CHLOROETHYL) ETHER		<0.01					
BIS (2-CHLOROISOPROPYL) ETHER		<0.01					
BIS (2-ETHYLHEXYL) PHTHALATE		<0.01					
BUTYL BENZYL PHTHALATE		<0.01					
CHRYSENE		<0.01					
DI-N-BUTYLPHTHALATE		<0.01					
DI-N-OCTYLPHTHALATE		<0.01					
DIBENZO (A,H) ANTHRACENE		<0.01					
DICHLOROMONOFLUOROMETHANE	0.0034						
DIETHYLPHTHALATE		<0.01					
DIMETHYLPHTHALATE		<0.01					
FLUORANTHENE		<0.01					
FLUORENE		<0.01					
HEXACHLOROBENZENE		<0.01					
HEXACHLOROBUTADIENE	<0.001	<0.01					
HEXACHLOROETHANE		<0.01					
INDENO (1,2,3-CD) PYRENE		<0.01					
ISOPHORONE		<0.01					
ISOPROPYLBENZENE	<0.001						
N-BUTYLBENZENE	<0.001						
N-NITROSO-DI-N-PROPYLAMINE		<0.01					
N-NITROSOPHENYLAMINE		<0.01					
N-PROPYLBENZENE	<0.001						
NAPHTHALENE	<0.001	<0.01					
NITROBENZENE		<0.01					
P-ISOPROPYLTOLUENE	<0.001						
PENTACHLOROPHENOL		<0.05					
PHENANTHRENE		<0.01					
PHENOL		<0.01					
PYRENE		<0.01					
SEC-BUTYLBENZENE	<0.001						

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	HL-90-2	HL-90-2	HL-90-2	HL-90-2	HL-90-2	HL-90-2	HL-90-2
SAMPLE DATE	02/03/90	05/10/90	04/04/91	01/22/92	05/19/92	05/19/92	11/16/92
SAMPLE TIME	12:45	16:40	16:00	11:30	15:00	15:30	15:55
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	90-2767	90-12197	91-12767	92-4686	92-19272	92-19273	92-49145
REMARKS						DUPLICATE	
SAMPLE NUMBER	HL90-2-102	HL-9005-120	HL-9104-104	HL-9201-104	HL-9205-101	HL-9205-119	HL-9211-104
-- SEMI-VOLATILE EXTRACTABLES --							
TERT-BUTYLBENZENE	<0.001						
-- HYDROCARBONS --							
TOTAL ORGANIC CARBON			2.0				
-- OTHER PARAMETERS --							
CYANIDE (CN) TOT			<0.005	<0.005	<0.005	<0.005	<0.005
CHEMICAL OXYGEN DEMAND			<1.0	2.0	1.0	2.0	8.0

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	HL-90-2	HL-90-2	HL-90-2	HL-90-2	HL-90-2	HL-90-2	HL-90-2
SAMPLE DATE	11/16/92	05/22/93	12/16/93	12/16/93	04/07/94	04/07/94	08/24/94
SAMPLE TIME	15:55	16:00	09:45	08:30	14:30	20:30	10:30
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	92-49146	93-20279	93-59626	93-59628	94-13574	94-13579	94-40100
REMARKS	DUPLICATE			DUPLICATE		DUPLICATE	
SAMPLE NUMBER	HL-9211-105	HL-9305-103	HL-9312-103	HL-9312-110	HL-9404-103	HL-9404-108	HL-9408-102
-- PHYSICAL PARAMETERS --							
DEPTH TO WATER LEVEL (FEET)	48.54	47.47	44.04	44.04	45.04	45.04	48.79
PH (FLD)	7.09	7.42	7.79	7.79	7.38	7.38	7.78
PH	7.8	7.8	7.6	7.5			
SC (UMHOS/CM AT 25 C)	796.0	796.0	851.0	862.0			
SC (UMHOS/CM AT 25 C) (FLD)	818.0	787.0	895.0	895.0	834.0	834.0	756.0
TDS (MEASURED AT 180 C)	498.0	481.0					
TOTAL SUSPENDED SOLIDS	32.0	38.0					
WATER TEMPERATURE (C) (FLD)	8.7	11.1	8.3	8.3	8.4	8.4	12.5
-- MAJOR CONSTITUENTS --							
CALCIUM (CA) DIS	103.0	103.0					
MAGNESIUM (MG) DIS	30.0	32.0					
SODIUM (NA) DIS	24.0	27.0					
POTASSIUM (K) DIS	3.0	3.0					
TOTAL ALKALINITY AS CACO3	340.0	335.0					
BICARBONATE (HCO3)	415.0	409.0					
CARBONATE AS CO3	0.0	0.0					
SULFATE (SO4)	66.0	63.0	63.0	63.0			
CHLORIDE (CL)	29.0	25.0	28.0	28.0			
-- NUTRIENTS --							
AMMONIA (NH3 AS N)	<0.1	0.1					
NITRATE (NO3-N)	0.99	0.81	1.1	1.1			
-- METALS & MINOR CONSTITUENTS --							
ANTIMONY (SB) DIS			<0.05	<0.05	<0.05	<0.05	
ARSENIC (AS) DIS	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
BARIUM (BA) DIS	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
BERYLLIUM (BE) DIS			<0.001	<0.001	<0.001	<0.001	
CADMIUM (CD) DIS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
CHROMIUM (CR) DIS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
COBALT (CO) DIS			<0.01	<0.01	<0.01	<0.01	
COPPER (CU) DIS			<0.01	<0.01	<0.01	<0.01	
IRON (FE) DIS	0.12	0.14	0.08	0.08			
LEAD (PB) DIS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
MANGANESE (MN) DIS	<0.02	0.01					
MERCURY (HG) DIS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
NICKEL (NI) DIS			<0.01	<0.01	<0.01	<0.01	
SELENIUM (SE) DIS	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
SILVER (AG) DIS	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
THALLIUM (TL) DIS			<0.1	<0.1	<0.1	<0.1	
TIN (SN) DIS					<0.1	<0.1	
VANADIUM (V) DIS			<0.1	<0.1	<0.1	<0.1	
ZINC (ZN) DIS			0.02	0.02	0.15	0.13	
-- VOLATILE ORGANICS --							
ACETONITRILE METHYLCYANIDE					<0.02	<0.02	
ALLYLCHLORIDE 3-CHLORO-1-PROPENE					<0.001	<0.001	
1,1,1,2-TETRACHLOROETHANE			<0.001	<0.001	<0.001	<0.001	<0.001
1,1,1-TRICHLOROETHANE	<0.001	<0.001	0.001	0.0011	<0.001	<0.001	0.001
1,1,2,2-TETRACHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,2-TRICHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-DICHLOROETHANE	0.0026	<0.001	0.0014	0.0018	0.003	0.0032	0.0021
1,1-DICHLOROETHENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-DICHLOROPROPENE					<0.001	<0.001	
1,2-DIBROMOETHANE			<0.001	<0.001	<0.001	<0.001	<0.001

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TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	HL-90-2	HL-90-2	HL-90-2	HL-90-2	HL-90-2	HL-90-2	HL-90-2
SAMPLE DATE	11/16/92	05/22/93	12/16/93	12/16/93	04/07/94	04/07/94	08/24/94
SAMPLE TIME	15:55	16:00	09:45	08:30	14:30	20:30	10:30
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	92-49146	93-20279	93-59626	93-59628	94-13574	94-13579	94-40100
REMARKS	DUPLICATE			DUPLICATE		DUPLICATE	
SAMPLE NUMBER	HL-9211-105	HL-9305-103	HL-9312-103	HL-9312-110	HL-9404-103	HL-9404-108	HL-9408-102
-- VOLATILE ORGANICS --							
1,2-DICHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-DICHLOROPROPANE			<0.001	<0.001	<0.001	<0.001	<0.001
2,2-DICHLOROPROPANE					<0.001	<0.001	
2-CHLOROETHYL VINYL ETHER	<0.001	<0.001					
2-HEXANONE			<0.02	<0.02	<0.02	<0.02	<0.02
4-BROMOFLUOROBENZENE	<0.01	<0.01					
ACETONE			<0.02	<0.02	<0.05	<0.05	<0.05
ACROLEIN					<0.02	<0.02	
ACRYLONITRILE			<0.02	<0.02	<0.02	<0.02	<0.02
BENZENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMOCHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMODICHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMOFORM	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMOMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CARBON DISULFIDE			<0.001	<0.001	<0.001	<0.001	<0.001
CARBON TETRACHLORIDE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROBENZENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROFORM	<0.001	0.0026	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROPRENE 2-CHLORO-1,3-BUTADIENE					<0.001	<0.001	
CIS-1,2-DICHLOROETHENE			<0.001	<0.001	<0.001	<0.001	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DIBROMOCHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DIBROMOMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DICHLORODIFLUOROMETHANE	<0.001	<0.001	<0.001	<0.001	0.0011	0.0013	<0.001
ETHYL METHACRYLATE	<0.001	<0.001			<0.001	<0.001	
ETHYLBENZENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
IODOMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
ISOBUTANOL					<0.05	<0.05	
TOTAL XYLENE	<0.001	<0.001					
M-P XYLENE			<0.001	<0.001			
O-XYLENE			<0.001	<0.001	<0.001	<0.001	<0.001
METHACRYLONITRILE					<0.02	<0.02	
METHYL ETHYL KETONE					<0.02	<0.02	<0.02
METHYL ETHYL KETONE			<0.02	<0.02			
METHYL ISOBUTL KETONE			<0.02	<0.02	<0.02	<0.02	<0.02
METHYL METHACRYLATE					<0.002	<0.002	
METHYLENE CHLORIDE	<0.001	0.0013	<0.001	<0.001	<0.001	<0.001	<0.001
PROPIONITRILE ETHYLCYANIDE					<0.02	<0.02	
STYRENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TETRACHLOROETHENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TOLUENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRICHLOROETHENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRICHLOROFLUOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
VINYL ACETATE	<0.02	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
VINYL CHLORIDE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
PICLORAM					<0.0005	<0.0005	
-- SEMI-VOLATILE EXTRACTABLES --							
ALPHA-CHLORDANE					<0.00005	<0.00005	
1,4-BENZENEDIAMINE					ND	ND	
CHLOROBENZILATE					<0.01	<0.01	
1,2,3-TRICHLOROPROPANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

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TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	HL-90-2	HL-90-2	HL-90-2	HL-90-2	HL-90-2	HL-90-2	HL-90-2
SAMPLE DATE	11/16/92	05/22/93	12/16/93	12/16/93	04/07/94	04/07/94	08/24/94
SAMPLE TIME	15:55	16:00	09:45	08:30	14:30	20:30	10:30
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	92-49146	93-20279	93-59626	93-59628	94-13574	94-13579	94-40100
REMARKS	DUPLICATE			DUPLICATE		DUPLICATE	
SAMPLE NUMBER	HL-9211-105	HL-9305-103	HL-9312-103	HL-9312-110	HL-9404-103	HL-9404-108	HL-9408-102
-- SEMI-VOLATILE EXTRACTABLES --							
1,2,4,5-TETRACHLOROBENZENE					<0.01	<0.01	
1,2,4-TRICHLOROBENZENE					<0.001	<0.001	
1,2-DIBROMO-3-CHLOROPROPANE			<0.001	<0.001	<0.001	<0.001	<0.001
1,2-DICHLOROBENZENE			<0.001	<0.001	<0.001	<0.001	<0.001
1,3,5-TRINITROBENZENE					<0.01	<0.01	
1,3-DICHLOROBENZENE					<0.001	<0.001	
1,3-DICHLOROPROPANE					<0.001	<0.001	
1,3-DINITROBENZENE					<0.01	<0.01	
TRANS-1,4-DICHLORO-2-BUTENE			<0.002	<0.002			<0.002
1,4-DICHLORO-2-BUTENE					<0.002	<0.002	
1,4-DICHLOROBENZENE			<0.001	<0.001	<0.001	<0.001	<0.001
1,4-DIFLUOROBENZENE	<0.001	<0.001					
METHAPYRILENE					ND	ND	
1-METHYLNAPHTHALENE					<0.01	<0.01	
1-NAPHTHYLAMINE					<0.01	<0.01	
2,3,4,6-TETRACHLOROPHENOL					<0.01	<0.01	
2,4,5-TRICHLOROPHENOL					<0.01	<0.01	
2,4,6-TRICHLOROPHENOL					<0.01	<0.01	
2,4-DICHLOROPHENOL					<0.01	<0.01	
2,4-DIMETHYLPHENOL					<0.01	<0.01	
2,4-DINITROPHENOL					<0.05	<0.05	
2,4-DINITROTOLUENE					<0.01	<0.01	
2,6-DICHLOROPHENOL					<0.01	<0.01	
2,6-DINITROTOLUENE					<0.01	<0.01	
2-CHLORONAPHTHALENE					<0.01	<0.01	
2-CHLOROPHENOL					<0.01	<0.01	
2-METHYLNAPHTHALENE					<0.01	<0.01	
2-METHYLPHENOL (O-CRESOL)					<0.01	<0.01	
2-NAPHTHYLAMINE					<0.01	<0.01	
2-NITROANILINE					<0.01	<0.01	
2-NITROPHENOL					<0.01	<0.01	
2-PICOLINE					<0.01	<0.01	
3,3-DICHLOROBENZIDINE					<0.02	<0.02	
3-METHYLCHOLANTHRENE					<0.1	<0.1	
3-NITROANILINE					<0.01	<0.01	
4,6-DINITRO-2-METHYLPHENOL					<0.05	<0.05	
4-AMINOBIPHENYL					<0.01	<0.01	
4-BROMOPHENYL PHENYL ETHER					<0.01	<0.01	
4-CHLORO-3-METHYLPHENOL					<0.01	<0.01	
4-CHLORO-2-METHYLPHENOL					<0.01	<0.01	
4-CHLOROPHENOL					<0.01	<0.01	
4-CHLOROPHENYL PHENYL ETHER					<0.01	<0.01	
4-METHYLPHENOL/3-METHYLPHENOL					<0.01	<0.01	
4-NITROANILINE					<0.01	<0.01	
4-NITROPHENOL					<0.0005	<0.0005	
7,12-DIMETHYLBENZENE (A) ANTHRACENE					<0.01	<0.01	
A,A-DIMETHYLPHENETHYLAMINE					ND	ND	
ACENAPHTHENE					<0.01	<0.01	
ACENAPHTHYLENE					<0.01	<0.01	
ACETOPHENONE					<0.01	<0.01	
ANILINE					<0.01	<0.01	
ANTHRACENE					<0.01	<0.01	
ARAMITE					<0.01	<0.01	
1,2-DIPHENYLHYDRAZINE (AZOBENZENE)					<0.01	<0.01	
BENZIDINE					<0.02	<0.02	
BENZO (A) ANTHRACENE					<0.01	<0.01	

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TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	HL-90-2	HL-90-2	HL-90-2	HL-90-2	HL-90-2	HL-90-2	HL-90-2
SAMPLE DATE	11/16/92	05/22/93	12/16/93	12/16/93	04/07/94	04/07/94	08/24/94
SAMPLE TIME	15:55	16:00	09:45	08:30	14:30	20:30	10:30
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	92-49146	93-20279	93-59626	93-59628	94-13574	94-13579	94-40100
REMARKS	DUPLICATE			DUPLICATE		DUPLICATE	
SAMPLE NUMBER	HL-9211-105	HL-9305-103	HL-9312-103	HL-9312-110	HL-9404-103	HL-9404-108	HL-5408-102
-- SEMI-VOLATILE EXTRACTABLES --							
BENZO (A) PYRENE					<0.01	<0.01	
BENZO (B) FLUORANTHENE					<0.01	<0.01	
BENZO (GHI) PERYLENE					<0.01	<0.01	
BENZO (K) FLUORANTHENE					<0.01	<0.01	
BENZYL ALCOHOL					<0.01	<0.01	
BIS (2-CHLOROETHOXY) METHANE					<0.01	<0.01	
BIS (2-CHLOROETHYL) ETHER					<0.01	<0.01	
BIS (2-CHLOROISOPROPYL) ETHER					<0.01	<0.01	
BIS (2-ETHYLHEXYL) PHTHALATE					<0.01	<0.01	
BUTYL BENZYL PHTHALATE					<0.01	<0.01	
CHRYSENE					<0.01	<0.01	
DI-N-BUTYLPHTHALATE					<0.01	<0.01	
DI-N-OCTYLPHTHALATE					<0.01	<0.01	
DIBENZO (A,H) ANTHRACENE					<0.01	<0.01	
DIBENZOFURAN					<0.01	<0.01	
DIETHYLPHTHALATE					<0.01	<0.01	
3,3'-DIMETHYLBENZIDINE					<0.01	<0.01	
DIMETHYLPHTHALATE					<0.01	<0.01	
DINOSEB					<0.001	<0.001	
DIPHENYLAMINE					<0.01	<0.01	
ETHYL METHANESULFONATE					<0.01	<0.01	
FAMPHUR					<0.01	<0.01	
FLUORANTHENE					<0.01	<0.01	
FLUORENE					<0.01	<0.01	
2-ACETYL AMINO FLUORENE					<0.01	<0.01	
HEXACHLOROBENZENE					<0.01	<0.01	
HEXACHLOROBUTADIENE					<0.001	<0.001	
HEXACHLOROCYCLOPENTADIENE					<0.01	<0.01	
HEXACHLOROETHANE					<0.01	<0.01	
HEXACHLOROPHENE					ND	ND	
HEXACHLOROPHROPENE					<0.01	<0.01	
INDENO (1,2,3-CD) PYRENE					<0.01	<0.01	
ISODRIN					<0.0001	<0.0001	
ISOPHORONE					<0.01	<0.01	
KEPONE					<0.001	<0.001	
ISOSAFROLE					<0.01	<0.01	
METHYL METHANESULFONATE					<0.01	<0.01	
5-NITRO-O-TOLUIDINE					<0.01	<0.01	
N-NITROSO-DI-N-BUTYLAMINE					<0.01	<0.01	
N-NITROSO-DI-N-PROPYLAMINE					<0.01	<0.01	
N-NITROSODIMETHYLAMINE					<0.01	<0.01	
N-NITROSODIPHENYLAMINE					<0.01	<0.01	
N-NITROSOPIPERIDINE					<0.01	<0.01	
N-NITROSODIETHYLAMINE					<0.01	<0.01	
N-NITROSOPYRROLIDINE					<0.01	<0.01	
O-TOLUIDINE					<0.01	<0.01	
N-NITROSOMORPHOLINE					<0.01	<0.01	
N-NITROSOMETHYLETHYLAMINE					<0.01	<0.01	
NAPHTHALENE			<0.001	<0.001	<0.001	<0.001	
NITROBENZENE					<0.01	<0.01	
4-NITROQUINOLINE-N-OXIDE					<0.1	<0.1	
P-CHLOROTOLUENE					<0.01	<0.01	
P-CHLOROANILINE					<0.01	<0.01	
P-DIMETHYLAMINOAZOBENZENE					<0.01	<0.01	
1,4-NAPHTHOQUINONE					<0.1	<0.1	
PARATHION					<0.01	<0.01	

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	HL-90-2	HL-90-2	HL-90-2	HL-90-2	HL-90-2	HL-90-2	HL-90-2
SAMPLE DATE	11/16/92	05/22/93	12/16/93	12/16/93	04/07/94	04/07/94	08/24/94
SAMPLE TIME	15:55	16:00	09:45	08:30	14:30	20:30	10:30
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	92-49146	93-20279	93-59626	93-59628	94-13574	94-13579	94-40100
REMARKS	DUPLICATE			DUPLICATE		DUPLICATE	
SAMPLE NUMBER	HL-9211-105	HL-9305-103	HL-9312-103	HL-9312-110	HL-9404-103	HL-9404-108	HL-9408-102
-- SEMI-VOLATILE EXTRACTABLES --							
PENTACHLOROBENZENE					<0.01	<0.01	
PENTACHLORONITROBENZENE					<0.01	<0.01	
PENTACHLOROPHENOL					<0.00005	<0.00005	
PHENACETIN					<0.01	<0.01	
PHENANTHRENE					<0.01	<0.01	
PHENOL					<0.01	<0.01	
O,O,O-TRIETHYLPHOSPHOROTHIOATE					<0.001	<0.01	
PYRENE					<0.01	<0.01	
PYRIDINE					<0.02	<0.02	
SAFROLE					<0.01	<0.01	
THIONAZIN					<0.01	<0.01	
-- HYDROCARBONS --							
M+P-XYLENE					<0.001	<0.001	
M+P-XYLENE							<0.001
ACIFLOURFEN					<0.0005	<0.0005	
BENTAZON					<0.0025	<0.0025	
CHLORAMBEN					<0.0005	<0.0005	
DACTHAL					<0.001	<0.001	
DALAPON					<0.01	<0.01	
DICAMBA					<0.00025	<0.00025	
DICHLORPROP					<0.001	<0.001	
AROCLOR 1016					<0.001	<0.001	
AROCLOR 1221					<0.002	<0.002	
AROCLOR 1232					<0.001	<0.001	
AROCLOR 1242					<0.001	<0.001	
AROCLOR 1248					<0.001	<0.001	
AROCLOR 1254					<0.001	<0.001	
AROCLOR 1260					<0.001	<0.001	
AROCLOR 1262					<0.001	<0.001	
AROCLOR 1268					<0.001	<0.001	
2,4-D					<0.001	<0.001	
2,4-DB					<0.0025	<0.0025	
DIALLATE (AVADEX)					<0.01	<0.01	
3,5-DICHLOROBEZOIC ACID					<0.0005	<0.0005	
DIMETHOATE (CYGON)					<0.1	<0.1	
DISULFOTON					<0.01	<0.01	
MCPA					<0.2	<0.2	
MCPP					<0.2	<0.2	
METHYL PARATHION (PENNCAP-M)					<0.01	<0.01	
PHORATE (THIMET)					<0.01	<0.01	
SULFOTEP					<0.01	<0.01	
2,4,5-T					<0.0002	<0.0002	
2,4,5-TP (SILVEX)					<0.0002	<0.0002	
-- OTHER PARAMETERS --							
4;4'-DDD					<0.0001	<0.0001	
4;4'-DDE					<0.0001	<0.0001	
4;4'-DDT					<0.0001	<0.0001	
ALDRIN					<0.00005	<0.00005	
ALPHA-BHC					<0.00005	<0.00005	
BETA-BHC					<0.00005	<0.00005	
GAMMA-CHLORDANE					<0.00005	<0.00005	
CYANIDE (CN) TOT	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
DELTA-BHC					<0.00005	<0.00005	
DIELDRIN					<0.0001	<0.0001	

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TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	HL-90-2	HL-90-2	HL-90-2	HL-90-2	HL-90-2	HL-90-2	HL-90-2
SAMPLE DATE	11/16/92	05/22/93	12/16/93	12/16/93	04/07/94	04/07/94	08/24/94
SAMPLE TIME	15:55	16:00	09:45	08:30	14:30	20:30	10:30
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	92-49146	93-20279	93-59626	93-59628	94-13574	94-13579	94-40100
REMARKS	DUPLICATE			DUPLICATE		DUPLICATE	
SAMPLE NUMBER	HL-9211-105	HL-9305-103	HL-9312-103	HL-9312-110	HL-9404-103	HL-9404-108	HL-9408-102
-- OTHER PARAMETERS --							
ENDOSULFAN I					<0.00005	<0.00005	
ENDOSULFAN II					<0.0001	<0.0001	
ENDOSULFAN SULFATE					<0.0001	<0.0001	
ENDRIN					<0.0001	<0.0001	
ENDRIN ALDEHYDE					<0.0001	<0.0001	
ENDRIN KETONE					<0.0001	<0.0001	
GAMMA-BHC(LINDANE)					<0.00005	<0.00005	
HEPTACHLOR					<0.00005	<0.00005	
HEPTACHLOR EPOXIDE					<0.00005	<0.00005	
METHOXYCHLOR					<0.0005	<0.0005	
PRONAMIDE					<0.01	<0.01	
SULFIDE AS S					<0.04	<0.04	
CHEMICAL OXYGEN DEMAND	8.0	<1.0	<1.0	<1.0			
TOXAPHENE					<0.005	<0.005	

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TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	HL-90-2
SAMPLE DATE	11/18/94
SAMPLE TIME	16:25
LAB	EL
LAB NUMBER	94-58157
SAMPLE NUMBER	HL-9411-104
-- PHYSICAL PARAMETERS --	
DEPTH TO WATER LEVEL (FEET)	46.66
PH (FLD)	7.75
PH	7.6
SC (UMHOS/CM AT 25 C)	765.0
SC (UMHOS/CM AT 25 C) (FLD)	765.0
WATER TEMPERATURE (C) (FLD)	8.3
-- MAJOR CONSTITUENTS --	
SULFATE (SO4)	50.0
CHLORIDE (CL)	28.0
-- NUTRIENTS --	
NITRATE + NITRITE AS N	1.06
-- METALS & MINOR CONSTITUENTS --	
ANTIMONY (SB) DIS	<0.05
ARSENIC (AS) DIS	<0.005
BARIUM (BA) DIS	<0.1
BERYLLIUM (BE) DIS	<0.001
CADMIUM (CD) DIS	<0.001
CHROMIUM (CR) DIS	<0.01
COBALT (CO) DIS	<0.01
COPPER (CU) DIS	<0.01
IRON (FE) DIS	0.03
LEAD (PB) DIS	<0.01
MERCURY (HG) DIS	<0.001
NICKEL (NI) DIS	<0.01
SELENIUM (SE) DIS	<0.005
SILVER (AG) DIS	<0.005
THALLIUM (TL) DIS	<0.1
VANADIUM (V) DIS	<0.1
ZINC (ZN) DIS	<0.01
-- VOLATILE ORGANICS --	
1,1,1,2-TETRACHLOROETHANE	<0.001
1,1,1-TRICHLOROETHANE	<0.001
1,1,2,2-TETRACHLOROETHANE	<0.001
1,1,2-TRICHLOROETHANE	<0.001
1,1-DICHLOROETHANE	0.0022
1,1-DICHLOROETHENE	<0.001
1,2-DIBROMOETHANE	<0.001
1,2-DICHLOROETHANE	<0.001
1,2-DICHLOROPROPANE	<0.001
2-HEXANONE	<0.02
ACETONE	<0.05
ACRYLONITRILE	<0.02
BENZENE	<0.001
BROMOCHLOROMETHANE	<0.001
BROMODICHLOROMETHANE	<0.001
BROMOFORM	<0.001
BROMOMETHANE	<0.001
CARBON DISULFIDE	<0.001
CARBON TETRACHLORIDE	<0.001
CHLOROBENZENE	<0.001
CHLOROETHANE	<0.001
CHLOROFORM	<0.001
CHLOROMETHANE	<0.001

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TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	HL-90-2
SAMPLE DATE	11/18/94
SAMPLE TIME	16:25
LAB	EL
LAB NUMBER	94-58157
SAMPLE NUMBER	HL-9411-104
-- VOLATILE ORGANICS --	
CIS-1,2-DICHLOROETHENE	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001
DIBROMOCHLOROMETHANE	<0.001
DIBROMOMETHANE	<0.001
DICHLORODIFLUOROMETHANE	<0.001
ETHYLBENZENE	<0.001
IODOMETHANE	<0.001
O-XYLENE	<0.001
METHYL ETHYL KETONE	<0.02
METHYL ISOBUTL KETONE	<0.02
METHYLENE CHLORIDE	<0.001
STYRENE	<0.001
TETRACHLOROETHENE	<0.001
TOLUENE	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001
TRICHLOROETHENE	<0.001
TRICHLOROFLUOROMETHANE	<0.001
VINYL ACETATE	<0.001
VINYL CHLORIDE	<0.001
-- SEMI-VOLATILE EXTRACTABLES --	
1,2,3-TRICHLOROPROPANE	<0.001
1,2-DIBROMO-3-CHLOROPROPANE	<0.001
1,2-DICHLOROBENZENE	<0.001
TRANS-1,4-DICHLORO-2-BUTENE	<0.002
1,4-DICHLOROBENZENE	<0.001
-- HYDROCARBONS --	
M+P-XYLENE	<0.001
-- OTHER PARAMETERS --	
CYANIDE (CN) TOT	<0.005
CHEMICAL OXYGEN DEMAND	5.0

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Sample Type: Monitoring Wells

SITE CODE	HL-90-3	HL-90-3	HL-90-3	HL-90-3	HL-90-3	HL-90-3	HL-90-3
SAMPLE DATE	02/02/90	04/05/91	01/21/92	05/19/92	11/16/92	05/22/93	12/15/93
SAMPLE TIME	14:30	14:30	14:00	10:30	13:15	14:30	14:45
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	90-2765	91-12770	92-4683	92-19269	92-49142	93-20283	93-59623
SAMPLE NUMBER	HL-90-2-100	HL-9104-107	HL-9201-100	HL-9205-109	HL-9211-101	HL-9305-104	HL-9312-104
-- PHYSICAL PARAMETERS --							
DEPTH TO WATER LEVEL (FEET)	57.81	55.47	54.16	56.71	55.8	55.96	55.1
PH (FLD)				7.08	7.26	7.18	7.4
PH	7.5	7.7	7.5	7.9	7.5	7.3	7.2
SC (UMHOS/CM AT 25 C)	1130.0		963.0	1040.0	948.0	1000.0	1070.0
SC (UMHOS/CM AT 25 C) (FLD)				1000.0	985.0	999.0	1140.0
TDS (MEASURED AT 180 C)	686.0	662.0	642.0	626.0	633.0	644.0	
TOTAL SUSPENDED SOLIDS			1850.0	83.0	650.0	138.0	
WATER TEMPERATURE (C) (FLD)			10.0	12.4	10.1	10.8	10.0
-- MAJOR CONSTITUENTS --							
TOTAL HARDNESS AS CACO3	435.0						
CALCIUM (CA) DIS	109.0	108.0	95.0	93.0	81.0	92.0	
MAGNESIUM (MG) DIS	40.0	39.0	35.0	41.0	30.0	34.0	
SODIUM (NA) DIS	80.0	83.0	90.0	94.0	92.0	92.0	
POTASSIUM (K) DIS	3.0	4.0	4.0	2.0	3.0	3.0	
TOTAL ALKALINITY AS CACO3	400.0	393.0	399.0	405.0	405.0	373.0	
BICARBONATE (HCO3)	488.0	479.0	487.0	494.0	494.0	455.0	
CARBONATE AS CO3	0.0	0.0	0.0	0.0	0.0	0.0	
SULFATE (SO4)	136.0	134.0	123.0	156.0	99.0	115.0	140.0
CHLORIDE (CL)	30.0	29.0	24.0	28.0	21.0	26.0	35.0
-- NUTRIENTS --							
AMMONIA (NH3 AS N)			<0.1	<0.1	<0.1	<0.1	
NITRATE (NO3-N)					5.02	5.82	5.71
NITRATE + NITRITE AS N	5.7	6.91	6.3				
TOTAL NITROGEN AS N		<0.1		7.07			
-- METALS & MINOR CONSTITUENTS --							
ANTIMONY (SB) DIS							<0.05
ARSENIC (AS) DIS		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
BARIUM (BA) DIS		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BERYLLIUM (BE) DIS							<0.001
CADMIUM (CD) DIS	0.006	0.002	0.001	<0.001	<0.001	<0.001	<0.001
CHROMIUM (CR) DIS		<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
COBALT (CO) DIS							<0.01
COPPER (CU) DIS	<0.01						<0.01
IRON (FE) DIS	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
LEAD (PB) DIS	<0.01	<0.01	<0.01	<0.01	0.02	0.02	<0.01
MANGANESE (MN) DIS		<0.02	<0.02	<0.02	<0.02	<0.01	
MERCURY (HG) DIS		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
NICKEL (NI) DIS							<0.01
SELENIUM (SE) DIS		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
SILVER (AG) DIS		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
THALLIUM (TL) DIS							<0.1
VANADIUM (V) DIS							<0.1
ZINC (ZN) DIS	0.02						0.11
-- VOLATILE ORGANICS --							
1,1,1,2-TETRACHLOROETHANE	<0.001						<0.001
1,1,1-TRICHLOROETHANE	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001
1,1,2,2-TETRACHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,2-TRICHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-DICHLOROETHANE	0.0011	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-DICHLOROETHENE	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001
1,1-DICHLOROPROPENE	<0.001						
1,2-DIBROMOETHANE	<0.001						<0.001
1,2-DICHLOROETHANE	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001

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Sample Type: Monitoring Wells

SITE CODE	HL-90-3	HL-90-3	HL-90-3	HL-90-3	HL-90-3	HL-90-3	HL-90-3
SAMPLE DATE	02/02/90	04/05/91	01/21/92	05/19/92	11/16/92	05/22/93	12/15/93
SAMPLE TIME	14:30	14:30	14:00	10:30	13:15	14:30	14:45
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	90-2765	91-12770	92-4683	92-19269	92-49142	93-20283	93-59623
SAMPLE NUMBER	HL-90-2-100	HL-9104-107	HL-9201-100	HL-9205-109	HL-9211-101	HL-9305-104	HL-9312-104
-- VOLATILE ORGANICS --							
1,2-DICHLOROPROPANE	<0.001						<0.001
2,2-DICHLOROPROPANE	<0.001						
2-BUTANONE (METHYL-ETHYL-KETONE)		<0.01					
2-CHLOROETHYL VINYL ETHER		<0.01	<0.01	<0.01	<0.001	<0.001	
2-CHLOROTOLUENE	<0.001						
2-HEXANONE		<0.01					<0.02
4-BROMOFLUOROBENZENE		<0.01	<0.01	<0.01	<0.01	<0.01	
4-CHLOROTOLUENE	<0.001						
4-METHYL-2-PENTANONE		<0.01					
ACETONE		<0.01					<0.02
ACROLEIN		<0.01					
ACRYLONITRILE		<0.01					<0.02
BENZENE	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001
BROMOBENZENE	<0.001						
BROMOCHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMODICHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMOFORM	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMOMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CARBON DISULFIDE		<0.01					<0.001
CARBON TETRACHLORIDE	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001
CHLOROBENZENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROFORM	0.0055	0.0058	0.0043	0.004	0.0038	0.0035	0.0036
CHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CIS-1,2-DICHLOROETHENE	0.0018						0.0015
CIS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DIBROMOCHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DIBROMOMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DICHLORODIFLUOROMETHANE	0.0013	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
ETHANOL		<0.01					
ETHYL METHACRYLATE		<0.01	<0.01	<0.01	<0.001	<0.001	
ETHYLBENZENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
IODOMETHANE		<0.01	<0.01	<0.01	<0.001	<0.001	<0.001
TOTAL XYLENE		<0.001	<0.001	<0.001	<0.001	<0.001	
M-XYLENE	<0.001						
M-P XYLENE							<0.001
O-XYLENE	<0.001						<0.001
P-XYLENE	<0.001						
METHYL ETHYL KETONE							<0.02
METHYL ISOBUTL KETONE							<0.02
METHYLENE CHLORIDE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
STYRENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TETRACHLOROETHENE	0.0026	0.0019	0.0011	0.0017	<0.001	0.0012	0.0014
TOLUENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRICHLOROETHENE	0.0006	0.00065	<0.0005	<0.0005	<0.001	<0.001	<0.001
TRICHLOROFLUOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
VINYL ACETATE		<0.01	<0.01	<0.01	<0.02	<0.001	<0.001
VINYL CHLORIDE	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001
-- SEMI-VOLATILE EXTRACTABLES --							
1,2,3-TRICHLOROBENZENE	<0.001						
1,2,3-TRICHLOROPROPANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2,4-TRICHLOROBENZENE	<0.001						
1,2,4-TRIMETHYLBENZENE	<0.001						
1,2-DIBROMO-3-CHLOROPROPANE	<0.001						<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	HL-90-3	HL-90-3	HL-90-3	HL-90-3	HL-90-3	HL-90-3	HL-90-3
SAMPLE DATE	02/02/90	04/05/91	01/21/92	05/19/92	11/16/92	05/22/93	12/15/93
SAMPLE TIME	14:30	14:30	14:00	10:30	13:15	14:30	14:45
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	90-2765	91-12770	92-4683	92-19269	92-49142	93-20283	93-59623
SAMPLE NUMBER	HL-90-2-100	HL-9104-107	HL-9201-100	HL-9205-109	HL-9211-101	HL-9305-104	HL-9312-104
-- SEMI-VOLATILE EXTRACTABLES --							
1,2-DICHLOROBENZENE	<0.001						<0.001
1,3,5-TRIMETHYLBENZENE	<0.001						
1,3-DICHLOROBENZENE	<0.001						
1,3-DICHLOROPROPANE	<0.001						
TRANS-1,4-DICHLORO-2-BUTENE							<0.002
1,4-DICHLORO-2-BUTENE		<0.01					
1,4-DICHLOROBENZENE	<0.0005						<0.001
1,4-DIFLUOROBENZENE		<0.01	<0.01	<0.01	<0.001	<0.001	
DICHLOROMONOFLUOROMETHANE	<0.001						
HEXACHLOROBUTADIENE	<0.001						
ISOPROPYLBENZENE	<0.001						
N-BUTYLBENZENE	<0.001						
N-PROPYLBENZENE	<0.001						
NAPHTHALENE	<0.001						<0.001
P-ISOPROPYLTOLUENE	<0.001						
SEC-BUTYLBENZENE	<0.001						
TERT-BUTYLBENZENE	<0.001						
-- HYDROCARBONS --							
TOTAL ORGANIC CARBON		2.0					
-- OTHER PARAMETERS --							
CYANIDE (CN) TOT		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
CHEMICAL OXYGEN DEMAND		3.0	10.0	14.0	12.0	<1.0	<1.0

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	HL-90-3	HL-90-3	HL-90-3
SAMPLE DATE	04/07/94	08/24/94	11/18/94
SAMPLE TIME	16:30	12:00	13:00
LAB	EL	EL	EL
LAB NUMBER	94-13575	94-40101	94-58158
SAMPLE NUMBER	HL-9404-104	HL-9408-103	HL-9411-105
-- PHYSICAL PARAMETERS --			
DEPTH TO WATER LEVEL (FEET)	55.88	59.12	57.51
PH (FLD)	7.53	7.44	6.95
PH			7.3
SC (UMHOS/CM AT 25 C)			1010.0
SC (UMHOS/CM AT 25 C) (FLD)	1115.0	861.0	953.0
WATER TEMPERATURE (C) (FLD)	10.0	12.7	10.0
-- MAJOR CONSTITUENTS --			
SULFATE (SO4)			118.0
CHLORIDE (CL)			28.0
-- NUTRIENTS --			
NITRATE + NITRITE AS N			6.45
-- METALS & MINOR CONSTITUENTS --			
ANTIMONY (SB) DIS	<0.05		<0.05
ARSENIC (AS) DIS	<0.005		<0.005
BARIUM (BA) DIS	0.1		<0.1
BERYLLIUM (BE) DIS	<0.001		<0.001
CADMIUM (CD) DIS	<0.001		<0.001
CHROMIUM (CR) DIS	<0.01		<0.01
COBALT (CO) DIS	<0.01		<0.01
COPPER (CU) DIS	<0.01		<0.01
IRON (FE) DIS			<0.03
LEAD (PB) DIS	<0.01		<0.01
MERCURY (HG) DIS	<0.001		<0.001
NICKEL (NI) DIS	<0.01		<0.01
SELENIUM (SE) DIS	<0.005		<0.005
SILVER (AG) DIS	<0.005		<0.005
THALLIUM (TL) DIS	<0.1		<0.1
TIN (SN) DIS	<0.1		
VANADIUM (V) DIS	<0.1		<0.1
ZINC (ZN) DIS	0.07		<0.01
-- VOLATILE ORGANICS --			
ACETONITRILE METHYLCYANIDE	<0.02		
ALLYLCHLORIDE 3-CHLORO-1-PROPENE	<0.001		
1,1,1,2-TETRACHLOROETHANE	<0.001	<0.001	<0.001
1,1,1-TRICHLOROETHANE	<0.001	<0.001	<0.001
1,1,2,2-TETRACHLOROETHANE	<0.001	<0.001	<0.001
1,1,2-TRICHLOROETHANE	<0.001	<0.001	<0.001
1,1-DICHLOROETHANE	0.001	<0.001	<0.001
1,1-DICHLOROETHENE	<0.001	<0.001	<0.001
1,1-DICHLOROPROPENE	<0.001		
1,2-DIBROMOETHANE	<0.001	<0.001	<0.001
1,2-DICHLOROETHANE	<0.001	<0.001	<0.001
1,2-DICHLOROPROPANE	<0.001	<0.001	<0.001
2,2-DICHLOROPROPANE	<0.001		
2-HEXANONE	<0.02	<0.02	<0.02
ACETONE	<0.05	<0.05	<0.05
ACROLEIN	<0.02		
ACRYLONITRILE	<0.02	<0.02	<0.02
BENZENE	<0.001	<0.001	<0.001
BROMOCHLOROMETHANE	<0.001	<0.001	<0.001
BROMODICHLOROMETHANE	<0.001	<0.001	<0.001
BROMOFORM	<0.001	<0.001	<0.001
BROMOMETHANE	<0.001	<0.001	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	HL-90-3	HL-90-3	HL-90-3
SAMPLE DATE	04/07/94	08/24/94	11/18/94
SAMPLE TIME	16:30	12:00	13:00
LAB	EL	EL	EL
LAB NUMBER	94-13575	94-40101	94-58158
SAMPLE NUMBER	HL-9404-104	HL-9408-103	HL-9411-105
-- VOLATILE ORGANICS --			
CARBON DISULFIDE	<0.001	<0.001	<0.001
CARBON TETRACHLORIDE	<0.001	<0.001	<0.001
CHLOROBENZENE	<0.001	<0.001	<0.001
CHLOROETHANE	<0.001	<0.001	<0.001
CHLOROFORM	0.0047	0.0038	0.004
CHLOROMETHANE	<0.001	<0.001	<0.001
CHLOROPRENE 2-CHLORO-1,3-BUTADIENE	<0.001		
CIS-1,2-DICHLOROETHENE	0.0024	0.0013	0.0013
CIS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001
DIBROMOCHLOROMETHANE	<0.001	<0.001	<0.001
DIBROMOMETHANE	<0.001	<0.001	<0.001
DICHLORODIFLUOROMETHANE	<0.001	<0.001	<0.001
ETHYL METHACRYLATE	<0.001		
ETHYLBENZENE	<0.001	<0.001	<0.001
IODOMETHANE	<0.001	<0.001	<0.001
ISOBUTANOL	<0.05		
O-XYLENE	<0.001	<0.001	<0.001
METHACRYLONITRILE	<0.02		
METHYL ETHYL KETONE	<0.02	<0.02	
METHYL ETHYL KETONE			<0.02
METHYL ISOBUTL KETONE	<0.02	<0.02	<0.02
METHYL METHACRYLATE	<0.002		
METHYLENE CHLORIDE	<0.001	<0.001	<0.001
PROPIONITRILE ETHYLCYANIDE	<0.02		
STYRENE	<0.001	<0.001	<0.001
TETRACHLOROETHENE	0.0019	0.001	0.0013
TOLUENE	<0.001	<0.001	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001	<0.001	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001
TRICHLOROETHENE	<0.001	<0.001	<0.001
TRICHLOROFLUOROMETHANE	<0.001	<0.001	<0.001
VINYL ACETATE	<0.001	<0.001	<0.001
VINYL CHLORIDE	<0.001	<0.001	<0.001
PICLORAM	<0.0005		
-- SEMI-VOLATILE EXTRACTABLES --			
ALPHA-CHLORDANE	<0.00005		
1,4-BENZENEDIAMINE	ND		
CHLOROBENZILATE	<0.01		
1,2,3-TRICHLOROPROPANE	<0.001	<0.001	<0.001
1,2,4,5-TETRACHLOROBENZENE	<0.01		
1,2,4-TRICHLOROBENZENE	<0.001		
1,2-DIBROMO-3-CHLOROPROPANE	<0.001	<0.001	<0.001
1,2-DICHLOROBENZENE	<0.001	<0.001	<0.001
1,3,5-TRINITROBENZENE	<0.01		
1,3-DICHLOROBENZENE	<0.001		
1,3-DICHLOROPROPANE	<0.001		
1,3-DINITROBENZENE	<0.01		
TRANS-1,4-DICHLORO-2-BUTENE		<0.002	<0.002
1,4-DICHLORO-2-BUTENE	<0.002		
1,4-DICHLOROBENZENE	<0.001	<0.001	<0.001
METHAPYRILENE	ND		
1-METHYLNAPHTHALENE	<0.01		
1-NAPHTHYLAMINE	<0.01		
2,3,4,6-TETRACHLOROPHENOL	<0.01		
2,4,5-TRICHLOROPHENOL	<0.01		
2,4,6-TRICHLOROPHENOL	<0.01		

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Sample Type: Monitoring Wells

SITE CODE	HL-90-3	HL-90-3	HL-90-3
SAMPLE DATE	04/07/94	08/24/94	11/18/94
SAMPLE TIME	16:30	12:00	13:00
LAB	EL	EL	EL
LAB NUMBER	94-13575	94-40101	94-58158
SAMPLE NUMBER	HL-9404-104	HL-9408-103	HL-9411-105
-- SEMI-VOLATILE EXTRACTABLES --			
2,4-DICHLOROPHENOL	<0.01		
2,4-DIMETHYLPHENOL	<0.01		
2,4-DINITROPHENOL	<0.05		
2,4-DINITROTOLUENE	<0.01		
2,6-DICHLOROPHENOL	<0.01		
2,6-DINITROTOLUENE	<0.01		
2-CHLORONAPHTHALENE	<0.01		
2-CHLOROPHENOL	<0.01		
2-METHYLNAPHTHALENE	<0.01		
2-METHYLPHENOL (O-CRESOL)	<0.01		
2-NAPHTHYLAMINE	<0.01		
2-NITROANILINE	<0.01		
2-NITROPHENOL	<0.01		
2-PICOLINE	<0.01		
3,3-DICHLOROBENZIDINE	<0.02		
3-METHYLCHOLANTHRENE	<0.1		
3-NITROANILINE	<0.01		
4,6-DINITRO-2-METHYLPHENOL	<0.05		
4-AMINOBIPHENYL	<0.01		
4-BROMOPHENYL PHENYL ETHER	<0.01		
4-CHLORO-3-METHYLPHENOL	<0.01		
4-CHLORO-2-METHYLPHENOL	<0.01		
4-CHLOROPHENOL	<0.01		
4-CHLOROPHENYL PHENYL ETHER	<0.01		
4-METHYLPHENOL/3-METHYLPHENOL	<0.01		
4-NITROANILINE	<0.01		
4-NITROPHENOL	<0.0005		
12-DIMETHYLBENZENE (A) ANTHRACENE	<0.01		
A,A-DIMETHYLPHENETHYLAMINE	ND		
ACENAPHTHENE	<0.01		
ACENAPHTHYLENE	<0.01		
ACETOPHENONE	<0.01		
ANILINE	<0.01		
ANTHRACENE	<0.01		
ARAMITE	<0.01		
1,2-DIPHENYLHYDRAZINE (AZOBENZENE)	<0.01		
BENZIDINE	<0.02		
BENZO (A) ANTHRACENE	<0.01		
BENZO (A) PYRENE	<0.01		
BENZO (B) FLUORANTHENE	<0.01		
BENZO (GHI) PERYLENE	<0.01		
BENZO (K) FLUORANTHENE	<0.01		
BENZYL ALCOHOL	<0.01		
BIS (2-CHLOROETHOXY) METHANE	<0.01		
BIS (2-CHLOROETHYL) ETHER	<0.01		
BIS (2-CHLOROISOPROPYL) ETHER	<0.01		
BIS (2-ETHYLHEXYL) PHTHALATE	<0.01		
BUTYL BENZYL PHTHALATE	<0.01		
CHRYSENE	<0.01		
DI-N-BUTYLPHTHALATE	<0.01		
DI-N-OCTYLPHTHALATE	<0.01		
DIBENZO (A,H) ANTHRACENE	<0.01		
DIBENZOFURAN	<0.01		
DIETHYLPHTHALATE	<0.01		
3,3'-DIMETHYLBENZIDINE	<0.01		
DIMETHYLPHTHALATE	<0.01		
DINOSEB	<0.001		

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Sample Type: Monitoring Wells

SITE CODE	HL-90-3	HL-90-3	HL-90-3
SAMPLE DATE	04/07/94	08/24/94	11/18/94
SAMPLE TIME	16:30	12:00	13:00
LAB	EL	EL	EL
LAB NUMBER	94-13575	94-40101	94-58158
SAMPLE NUMBER	HL-9404-104	HL-9408-103	HL-9411-105
-- SEMI-VOLATILE EXTRACTABLES --			
DIPHENYLAMINE	<0.01		
ETHYL METHANESULFONATE	<0.01		
FAMPHUR	<0.01		
FLUORANTHENE	<0.01		
FLUORENE	<0.01		
2-ACETYL AMINO FLUORENE	<0.01		
HEXACHLOROBENZENE	<0.01		
HEXACHLOROBUTADIENE	<0.001		
HEXACHLOROCYCLOPENTADIENE	<0.01		
HEXACHLOROETHANE	<0.01		
HEXACHLOROPHENE	ND		
HEXACHLOROPHROPENE	<0.01		
INDENO (1,2,3-CD) PYRENE	<0.01		
ISODRIN	<0.0001		
ISOPHORONE	<0.01		
KEPONE	<0.001		
ISOSAFROLE	<0.01		
METHYL METHANESULFONATE	<0.01		
5-NITRO-O-TOLUIDINE	<0.01		
N-NITROSO-DI-N-BUTYLAMINE	<0.01		
N-NITROSO-DI-N-PROPYLAMINE	<0.01		
N-NITROSODIMETHYLAMINE	<0.01		
N-NITROSODIPHENYLAMINE	<0.01		
N-NITROSOPIPERIDINE	<0.01		
N-NITROSODIETHYLAMINE	<0.01		
N-NITROSOPYRROLIDINE	<0.01		
O-TOLUIDINE	<0.01		
N-NITROSOMORPHOLINE	<0.01		
N-NITROSOMETHYLETHYLAMINE	<0.01		
NAPHTHALENE	<0.001		
NITROBENZENE	<0.01		
4-NITROQUINOLINE-N-OXIDE	<0.1		
P-CHLOROTOLUENE	<0.01		
P-CHLOROANILINE	<0.01		
P-DIMETHYLAMINOAZOBENZENE	<0.01		
1,4-NAPHTHOQUINONE	<0.1		
PARATHION	<0.01		
PENTACHLOROBENZENE	<0.01		
PENTACHLORONITROBENZENE	<0.01		
PENTACHLOROPHENOL	<0.00005		
PHENACETIN	<0.01		
PHENANTHRENE	<0.01		
PHENOL	<0.01		
O,O,O-TRIETHYLPHOSPHOROTHIOATE	<0.01		
PYRENE	<0.01		
PYRIDINE	<0.02		
SAFROLE	<0.01		
THIONAZIN	<0.01		
-- HYDROCARBONS --			
M+P-XYLENE	<0.001		
M+P-XYLENE		<0.001	<0.001
ACIFLOURFEN	<0.0005		
BENTAZON	<0.0025		
CHLORAMBEN	<0.0005		
DACTHAL	<0.001		
DALAPON	<0.01		

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TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	HL-90-3	HL-90-3	HL-90-3
SAMPLE DATE	04/07/94	08/24/94	11/18/94
SAMPLE TIME	16:30	12:00	13:00
LAB	EL	EL	EL
LAB NUMBER	94-13575	94-40101	94-58158
SAMPLE NUMBER	HL-9404-104	HL-9408-103	HL-9411-105
-- HYDROCARBONS --			
DICAMBA	<0.00025		
DICHLORPROP	<0.001		
AROCLOR 1016	<0.001		
AROCLOR 1221	<0.002		
AROCLOR 1232	<0.001		
AROCLOR 1242	<0.001		
AROCLOR 1248	<0.001		
AROCLOR 1254	<0.001		
AROCLOR 1260	<0.001		
AROCLOR 1262	<0.001		
AROCLOR 1268	<0.001		
2,4-D	<0.001		
2,4-DB	<0.0025		
DIALLATE (AVADEX)	<0.01		
3,5-DICHLOROBEZOIC ACID	<0.0005		
DIMETHOATE (CYGON)	<0.1		
DISULFOTON	<0.01		
MCPA	<0.2		
MCPP	<0.2		
METHYL PARATHION (PENNCAP-M)	<0.01		
PHORATE (THIMET)	<0.01		
SULFOTEP	<0.01		
2,4,5-T	<0.0002		
2,4,5-TP (SILVEX)	<0.0002		
-- OTHER PARAMETERS --			
4;4'-DDD	<0.0001		
4;4'-DDE	<0.0001		
4;4'-DDT	<0.0001		
ALDRIN	<0.00005		
ALPHA-BHC	<0.00005		
BETA-BHC	<0.00005		
GAMMA-CHLORDANE	<0.00005		
CYANIDE (CN) TOT	<0.005		<0.005
DELTA-BHC	<0.00005		
DIELDRIN	<0.0001		
ENDOSULFAN I	<0.00005		
ENDOSULFAN II	<0.0001		
ENDOSULFAN SULFATE	<0.0001		
ENDRIN	<0.0001		
ENDRIN ALDEHYDE	<0.0001		
ENDRIN KETONE	<0.0001		
GAMMA-BHC(LINDANE)	<0.00005		
HEPTACHLOR	<0.00005		
HEPTACHLOR EPOXIDE	<0.00005		
METHOXYCHLOR	<0.0005		
PRONAMIDE	<0.01		
SULFIDE AS S	<0.04		
CHEMICAL OXYGEN DEMAND			7.0
TOXAPHENE	<0.005		

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
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Sample Type: Monitoring Wells

SITE CODE	HL-94-1	HL-94-1
SAMPLE DATE	04/08/94	11/18/94
SAMPLE TIME	09:30	10:00
LAB	EL	EL
LAB NUMBER	94-13576	94-58159
SAMPLE NUMBER	HL-9404-105	HL-9411-106
-- PHYSICAL PARAMETERS --		
DEPTH TO WATER LEVEL (FEET)	53.32	53.38
PH (FLD)	7.67	7.19
PH		7.6
SC (UMHOS/CM AT 25 C)		848.0
SC (UMHOS/CM AT 25 C) (FLD)	907.0	837.0
WATER TEMPERATURE (C) (FLD)	9.7	9.1
-- MAJOR CONSTITUENTS --		
SULFATE (SO4)		123.0
CHLORIDE (CL)		23.0
-- NUTRIENTS --		
NITRATE + NITRITE AS N		7.38
-- METALS & MINOR CONSTITUENTS --		
ANTIMONY (SB) DIS	<0.05	<0.05
ARSENIC (AS) DIS	<0.005	<0.005
BARIUM (BA) DIS	0.1	<0.1
BERYLLIUM (BE) DIS	<0.001	<0.001
CADMIUM (CD) DIS	<0.001	<0.001
CHROMIUM (CR) DIS	<0.01	<0.01
COBALT (CO) DIS	<0.01	<0.01
COPPER (CU) DIS	<0.01	<0.01
IRON (FE) DIS		<0.03
LEAD (PB) DIS	<0.01	<0.01
MERCURY (HG) DIS	<0.001	<0.001
NICKEL (NI) DIS	<0.01	<0.01
SELENIUM (SE) DIS	<0.005	<0.005
SILVER (AG) DIS	<0.005	<0.005
THALLIUM (TL) DIS	<0.1	<0.1
TIN (SN) DIS	<0.1	
VANADIUM (V) DIS	<0.1	<0.1
ZINC (ZN) DIS	0.01	<0.01
-- VOLATILE ORGANICS --		
ACETONITRILE METHYLCYANIDE	<0.02	
ALLYLCHLORIDE 3-CHLORO-1-PROPENE	<0.001	
1,1,1,2-TETRACHLOROETHANE	<0.001	<0.001
1,1,1-TRICHLOROETHANE	<0.001	<0.001
1,1,2,2-TETRACHLOROETHANE	<0.001	<0.001
1,1,2-TRICHLOROETHANE	<0.001	<0.001
1,1-DICHLOROETHANE	<0.001	<0.001
1,1-DICHLOROETHENE	<0.001	<0.001
1,1-DICHLOROPROPENE	<0.001	
1,2-DIBROMOETHANE	<0.001	<0.001
1,2-DICHLOROETHANE	<0.001	<0.001
1,2-DICHLOROPROPANE	<0.001	<0.001
2,2-DICHLOROPROPANE	<0.001	
2-HEXANONE	<0.02	<0.02
ACETONE	<0.05	<0.05
ACROLEIN	<0.02	
ACRYLONITRILE	<0.02	<0.02
BENZENE	<0.001	<0.001
BROMOCHLOROMETHANE	<0.001	<0.001
BROMODICHLOROMETHANE	<0.001	<0.001
BROMOFORM	<0.001	<0.001
BROMOMETHANE	<0.001	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	HL-94-1	HL-94-1
SAMPLE DATE	04/08/94	11/18/94
SAMPLE TIME	09:30	10:00
LAB	EL	EL
LAB NUMBER	94-13576	94-58159
SAMPLE NUMBER	HL-9404-105	HL-9411-106
-- VOLATILE ORGANICS --		
CARBON DISULFIDE	<0.001	<0.001
CARBON TETRACHLORIDE	<0.001	<0.0005
CHLOROBENZENE	<0.001	<0.001
CHLOROETHANE	<0.001	<0.001
CHLOROFORM	0.0042	0.0039
CHLOROMETHANE	<0.001	<0.001
CHLOROPRENE 2-CHLORO-1,3-BUTADIENE	<0.001	
CIS-1,2-DICHLOROETHENE	<0.001	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001	<0.001
DIBROMOCHLOROMETHANE	<0.001	<0.001
DIBROMOMETHANE	<0.001	<0.001
DICHLORODIFLUOROMETHANE	<0.001	<0.001
ETHYL METHACRYLATE	<0.001	
ETHYLBENZENE	<0.001	<0.001
IODOMETHANE	<0.001	<0.001
ISOBUTANOL	<0.05	
O-XYLENE	<0.001	<0.001
METHACRYLONITRILE	<0.02	
METHYL ETHYL KETONE	<0.02	
METHYL ETHYL KETONE		<0.02
METHYL ISOBUTL KETONE	<0.02	<0.02
METHYL METHACRYLATE	<0.002	
METHYLENE CHLORIDE	<0.001	<0.001
PROPIONITRILE ETHYLCYANIDE	<0.02	
STYRENE	<0.001	<0.001
TETRACHLOROETHENE	<0.001	<0.001
TOLUENE	<0.001	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001	<0.001
TRICHLOROETHENE	<0.001	<0.001
TRICHLOROFLUOROMETHANE	<0.001	<0.001
VINYL ACETATE	<0.001	<0.001
VINYL CHLORIDE	<0.001	<0.001
PICLORAM	<0.0005	
-- SEMI-VOLATILE EXTRACTABLES --		
ALPHA-CHLORDANE	<0.00005	
1,4-BENZENEDIAMINE	ND	
CHLOROBENZILATE	<0.01	
1,2,3-TRICHLOROPROPANE	<0.001	<0.001
1,2,4,5-TETRACHLOROBENZENE	<0.01	
1,2,4-TRICHLOROBENZENE	<0.001	
1,2-DIBROMO-3-CHLOROPROPANE	<0.001	<0.001
1,2-DICHLOROBENZENE	<0.001	<0.001
1,3,5-TRINITROBENZENE	<0.01	
1,3-DICHLOROBENZENE	<0.001	
1,3-DICHLOROPROPANE	<0.001	
1,3-DINITROBENZENE	<0.01	
TRANS-1,4-DICHLORO-2-BUTENE		<0.002
1,4-DICHLORO-2-BUTENE	<0.002	
1,4-DICHLOROBENZENE	<0.001	<0.001
METHAPYRILENE	ND	
1-METHYLNAPHTHALENE	<0.01	
1-NAPHTHYLAMINE	<0.01	
2,3,4,6-TETRACHLOROPHENOL	<0.01	
2,4,5-TRICHLOROPHENOL	<0.01	
2,4,6-TRICHLOROPHENOL	<0.01	

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TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	HL-94-1	HL-94-1
SAMPLE DATE	04/08/94	11/18/94
SAMPLE TIME	09:30	10:00
LAB	EL	EL
LAB NUMBER	94-13576	94-58159
SAMPLE NUMBER	HL-9404-105	HL-9411-106
-- SEMI-VOLATILE EXTRACTABLES --		
2,4-DICHLOROPHENOL	<0.01	
2,4-DIMETHYLPHENOL	<0.01	
2,4-DINITROPHENOL	<0.05	
2,4-DINITROTOLUENE	<0.01	
2,6-DICHLOROPHENOL	<0.01	
2,6-DINITROTOLUENE	<0.01	
2-CHLORONAPHTHALENE	<0.01	
2-CHLOROPHENOL	<0.01	
2-METHYLNAPHTHALENE	<0.01	
2-METHYLPHENOL (O-CRESOL)	<0.01	
2-NAPHTHYLAMINE	<0.01	
2-NITROANILINE	<0.01	
2-NITROPHENOL	<0.01	
2-PICOLINE	<0.01	
3,3-DICHLOROBENZIDINE	<0.02	
3-METHYLCHOLANTHRENE	<0.1	
3-NITROANILINE	<0.01	
4,6-DINITRO-2-METHYLPHENOL	<0.05	
4-AMINOBIPHENYL	<0.01	
4-BROMOPHENYL PHENYL ETHER	<0.01	
4-CHLORO-3-METHYLPHENOL	<0.01	
4-CHLORO-2-METHYLPHENOL	<0.01	
4-CHLOROPHENOL	<0.01	
4-CHLOROPHENYL PHENYL ETHER	<0.01	
4-METHYLPHENOL/3-METHYLPHENOL	<0.01	
4-NITROANILINE	<0.01	
4-NITROPHENOL	<0.0005	
12-DIMETHYLBENZENE (A) ANTHRACENE	<0.01	
A,A-DIMETHYLPHENETHYLAMINE	ND	
ACENAPHTHENE	<0.01	
ACENAPHTHYLENE	<0.01	
ACETOPHENONE	<0.01	
ANILINE	<0.01	
ANTHRACENE	<0.01	
ARAMITE	<0.01	
1,2-DIPHENYLHYDRAZINE (AZOBENZENE)	<0.01	
BENZIDINE	<0.02	
BENZO (A) ANTHRACENE	<0.01	
BENZO (A) PYRENE	<0.01	
BENZO (B) FLUORANTHENE	<0.01	
BENZO (GHI) PERYLENE	<0.01	
BENZO (K) FLUORANTHENE	<0.01	
BENZYL ALCOHOL	<0.01	
BIS (2-CHLOROETHOXY) METHANE	<0.01	
BIS (2-CHLOROETHYL) ETHER	<0.01	
BIS (2-CHLOROISOPROPYL) ETHER	<0.01	
BIS (2-ETHYLHEXYL) PHTHALATE	0.01	
BUTYL BENZYL PHTHALATE	<0.01	
CHRYSENE	<0.01	
DI-N-BUTYLPHTHALATE	<0.01	
DI-N-OCTYLPHTHALATE	<0.01	
DIBENZO (A,H) ANTHRACENE	<0.01	
DIBENZOFURAN	<0.01	
DIETHYLPHTHALATE	<0.01	
3,3'-DIMETHYLBENZIDINE	<0.01	
DIMETHYLPHTHALATE	<0.01	
DINOSEB	<0.001	

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Sample Type: Monitoring Wells

SITE CODE	HL-94-1	HL-94-1	
SAMPLE DATE	04/08/94	11/18/94	
SAMPLE TIME	09:30	10:00	
LAB	EL	EL	
LAB NUMBER	94-13576	94-58159	
SAMPLE NUMBER	HL-9404-105	HL-9411-106	
-- SEMI-VOLATILE EXTRACTABLES --			
DIPHENYLAMINE	<0.01		
ETHYL METHANESULFONATE	<0.01		
FAMPHUR	<0.01		
FLUORANTHENE	<0.01		
FLUORENE	<0.01		
2-ACETYL AMINO FLUORENE	<0.01		
HEXACHLOROBENZENE	<0.01		
HEXACHLOROBUTADIENE	<0.001		
HEXACHLOROCYCLOPENTADIENE	<0.01		
HEXACHLOROETHANE	<0.01		
HEXACHLOROPHENE	ND		
HEXACHLOROPHROPENE	<0.01		
INDENO (1,2,3-CD) PYRENE	<0.01		
ISODRIN	<0.0001		
ISOPHORONE	<0.01		
KEPONE	<0.001		
ISOSAFROLE	<0.01		
METHYL METHANESULFONATE	<0.01		
5-NITRO-O-TOLUIDINE	<0.01		
N-NITROSO-DI-N-BUTYLAMINE	<0.01		
N-NITROSO-DI-N-PROPYLAMINE	<0.01		
N-NITROSODIMETHYLAMINE	<0.01		
N-NITROSODIPHENYLAMINE	<0.01		
N-NITROSOPIPERIDINE	<0.01		
N-NITROSODIETHYLAMINE	<0.01		
N-NITROSOPYRROLIDINE	<0.01		
O-TOLUIDINE	<0.01		
N-NITROSOMORPHOLINE	<0.01		
N-NITROSOMETHYLETHYLAMINE	<0.01		
NAPHTHALENE	<0.001		
NITROBENZENE	<0.01		
4-NITROQUINOLINE-N-OXIDE	<0.1		
P-CHLOROTOLUENE	<0.01		
P-CHLOROANILINE	<0.01		
P-DIMETHYLAMINOAZOBENZENE	<0.01		
1,4-NAPHTHOQUINONE	<0.1		
PARATHION	<0.01		
PENTACHLOROBENZENE	<0.01		
PENTACHLORONITROBENZENE	<0.01		
PENTACHLOROPHENOL	<0.00005		
PHENACETIN	<0.01		
PHENANTHRENE	<0.01		
PHENOL	<0.01		
O,O,O-TRIETHYLPHOSPHOROTHIOATE	<0.01		
PYRENE	<0.01		
PYRIDINE	<0.02		
SAFROLE	<0.01		
THIONAZIN	<0.01		
-- HYDROCARBONS --			
M+P-XYLENE	<0.001		
M+P-XYLENE		<0.001	
ACIFLOURFEN	<0.0005		
BENTAZON	<0.0025		
CHLORAMBEN	<0.0005		
DACTHAL	<0.001		
DALAPON	<0.01		

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Sample Type: Monitoring Wells

SITE CODE	HL-94-1	HL-94-1
SAMPLE DATE	04/08/94	11/18/94
SAMPLE TIME	09:30	10:00
LAB	EL	EL
LAB NUMBER	94-13576	94-58159
SAMPLE NUMBER	HL-9404-105	HL-9411-106
-- HYDROCARBONS --		
DICAMBA	<0.00025	
DICHLORPROP	<0.001	
AROCLOR 1016	<0.001	
AROCLOR 1221	<0.002	
AROCLOR 1232	<0.001	
AROCLOR 1242	<0.001	
AROCLOR 1248	<0.001	
AROCLOR 1254	<0.001	
AROCLOR 1260	<0.001	
AROCLOR 1262	<0.001	
AROCLOR 1268	<0.001	
2,4-D	<0.001	
2,4-DB	<0.0025	
DIALLATE (AVADEX)	<0.01	
3,5-DICHLOROBEZOIC ACID	<0.0005	
DIMETHOATE (CYGON)	<0.1	
DISULFOTON	<0.01	
MCPA	<0.2	
MCPP	<0.2	
METHYL PARATHION (PENNCAP-M)	<0.01	
PHORATE (THIMET)	<0.01	
SULFOTEP	<0.01	
2,4,5-T	<0.0002	
2,4,5-TP (SILVEX)	<0.0002	
-- OTHER PARAMETERS --		
4;4'-DDD	<0.0001	
4;4'-DDE	<0.0001	
4;4'-DDT	<0.0001	
ALDRIN	<0.00005	
ALPHA-BHC	<0.00005	
BETA-BHC	<0.00005	
GAMMA-CHLORDANE	<0.00005	
CYANIDE (CN) TOT	<0.005	<0.005
DELTA-BHC	<0.00005	
DIELDRIN	<0.0001	
ENDOSULFAN I	<0.00005	
ENDOSULFAN II	<0.0001	
ENDOSULFAN SULFATE	<0.0001	
ENDRIN	<0.0001	
ENDRIN ALDEHYDE	<0.0001	
ENDRIN KETONE	<0.0001	
GAMMA-BHC(LINDANE)	<0.00005	
HEPTACHLOR	<0.00005	
HEPTACHLOR EPOXIDE	<0.00005	
METHOXYCHLOR	<0.0005	
PRONAMIDE	<0.01	
SULFIDE AS S	<0.04	
CHEMICAL OXYGEN DEMAND		16.0
TOXAPHENE	<0.005	

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Sample Type: Monitoring Wells

SITE CODE	HL-94-2	HL-94-2
SAMPLE DATE	04/08/94	11/18/94
SAMPLE TIME	11:30	11:00
LAB	EL	EL
LAB NUMBER	94-13577	94-58160
SAMPLE NUMBER	HL-9404-106	HL-9411-107
-- PHYSICAL PARAMETERS --		
DEPTH TO WATER LEVEL (FEET)	37.15	32.82
PH (FLD)	7.93	7.68
PH		7.6
SC (UMHOS/CM AT 25 C)		976.0
SC (UMHOS/CM AT 25 C) (FLD)	1015.0	985.0
WATER TEMPERATURE (C) (FLD)	9.5	7.8
-- MAJOR CONSTITUENTS --		
SULFATE (SO4)		94.0
CHLORIDE (CL)		55.0
-- NUTRIENTS --		
NITRATE + NITRITE AS N		8.13
-- METALS & MINOR CONSTITUENTS --		
ANTIMONY (SB) DIS	<0.05	<0.05
ARSENIC (AS) DIS	0.007	<0.005
BARIUM (BA) DIS	<0.1	<0.1
BERYLLIUM (BE) DIS	<0.001	<0.001
CADMIUM (CD) DIS	<0.001	<0.001
CHROMIUM (CR) DIS	<0.01	<0.01
COBALT (CO) DIS	<0.01	<0.01
COPPER (CU) DIS	<0.01	<0.01
IRON (FE) DIS		<0.03
LEAD (PB) DIS	<0.01	<0.01
MERCURY (HG) DIS	<0.001	<0.001
NICKEL (NI) DIS	<0.01	<0.01
SELENIUM (SE) DIS	<0.005	0.027
SILVER (AG) DIS	<0.005	<0.005
THALLIUM (TL) DIS	<0.1	<0.1
TIN (SN) DIS	<0.1	
VANADIUM (V) DIS	<0.1	<0.1
ZINC (ZN) DIS	<0.01	<0.01
-- VOLATILE ORGANICS --		
ACETONITRILE METHYLCYANIDE	<0.02	
ALLYLCHLORIDE 3-CHLORO-1-PROPENE	<0.001	
1,1,1,2-TETRACHLOROETHANE	<0.001	<0.001
1,1,1-TRICHLOROETHANE	<0.001	<0.001
1,1,2,2-TETRACHLOROETHANE	<0.001	<0.001
1,1,2-TRICHLOROETHANE	<0.001	<0.001
1,1-DICHLOROETHANE	<0.001	<0.001
1,1-DICHLOROETHENE	<0.001	<0.001
1,1-DICHLOROPROPENE	<0.001	
1,2-DIBROMOETHANE	<0.001	<0.001
1,2-DICHLOROETHANE	<0.001	<0.001
1,2-DICHLOROPROPANE	<0.001	<0.001
2,2-DICHLOROPROPANE	<0.001	
2-HEXANONE	<0.02	<0.02
ACETONE	<0.05	<0.05
ACROLEIN	<0.02	
ACRYLONITRILE	<0.02	<0.002
BENZENE	<0.001	<0.001
BROMOCHLOROMETHANE	<0.001	<0.001
BROMODICHLOROMETHANE	<0.001	<0.001
BROMOFORM	<0.001	<0.001
BROMOMETHANE	<0.001	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	HL-94-2	HL-94-2
SAMPLE DATE	04/08/94	11/18/94
SAMPLE TIME	11:30	11:00
LAB	EL	EL
LAB NUMBER	94-13577	94-58160
SAMPLE NUMBER	HL-9404-106	HL-9411-107
-- VOLATILE ORGANICS --		
CARBON DISULFIDE	<0.001	<0.001
CARBON TETRACHLORIDE	<0.001	<0.001
CHLOROBENZENE	<0.001	<0.001
CHLOROETHANE	<0.001	<0.001
CHLOROFORM	0.0062	0.0053
CHLOROMETHANE	<0.001	<0.001
CHLOROPRENE 2-CHLORO-1,3-BUTADIENE	<0.001	
CIS-1,2-DICHLOROETHENE	<0.001	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001	<0.001
DIBROMOCHLOROMETHANE	<0.001	<0.001
DIBROMOMETHANE	<0.001	<0.001
DICHLORODIFLUOROMETHANE	<0.001	<0.001
ETHYL METHACRYLATE	<0.001	
ETHYLBENZENE	<0.001	<0.001
IODOMETHANE	<0.001	<0.001
ISOBUTANOL	<0.05	
O-XYLENE	<0.001	<0.001
METHACRYLONITRILE	<0.02	
METHYL ETHYL KETONE	<0.02	
METHYL ETHYL KETONE		<0.02
METHYL ISOBUTL KETONE	<0.02	<0.02
METHYL METHACRYLATE	<0.002	
METHYLENE CHLORIDE	<0.001	<0.001
PROPIONITRILE ETHYLCYANIDE	<0.02	
STYRENE	<0.001	<0.001
TETRACHLOROETHENE	<0.001	<0.001
TOLUENE	<0.001	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001	<0.001
TRICHLOROETHENE	<0.001	<0.001
TRICHLOROFLUOROMETHANE	<0.001	<0.001
VINYL ACETATE	<0.001	<0.001
VINYL CHLORIDE	<0.001	<0.001
PICLORAM	<0.0005	
-- SEMI-VOLATILE EXTRACTABLES --		
ALPHA-CHLORDANE	<0.00005	
1,4-BENZENEDIAMINE	ND	
CHLOROBENZILATE	<0.01	
1,2,3-TRICHLOROPROPANE	<0.001	<0.001
1,2,4,5-TETRACHLOROBENZENE	<0.01	
1,2,4-TRICHLOROBENZENE	<0.001	
1,2-DIBROMO-3-CHLOROPROPANE	<0.001	<0.001
1,2-DICHLOROBENZENE	<0.001	<0.001
1,3,5-TRINITROBENZENE	<0.01	
1,3-DICHLOROBENZENE	<0.001	
1,3-DICHLOROPROPANE	<0.001	
1,3-DINITROBENZENE	<0.01	
TRANS-1,4-DICHLORO-2-BUTENE		<0.002
1,4-DICHLORO-2-BUTENE	<0.002	
1,4-DICHLOROBENZENE	<0.001	<0.001
METHAPYRILENE	ND	
1-METHYLNAPHTHALENE	<0.01	
1-NAPHTHYLAMINE	<0.01	
2,3,4,6-TETRACHLOROPHENOL	<0.01	
2,4,5-TRICHLOROPHENOL	<0.01	
2,4,6-TRICHLOROPHENOL	<0.01	

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Sample Type: Monitoring Wells

SITE CODE	HL-94-2	HL-94-2
SAMPLE DATE	04/08/94	11/18/94
SAMPLE TIME	11:30	11:00
LAB	EL	EL
LAB NUMBER	94-13577	94-58160
SAMPLE NUMBER	HL-9404-106	HL-9411-107
-- SEMI-VOLATILE EXTRACTABLES --		
2,4-DICHLOROPHENOL	<0.01	
2,4-DIMETHYLPHENOL	<0.01	
2,4-DINITROPHENOL	<0.05	
2,4-DINITROTOLUENE	<0.01	
2,6-DICHLOROPHENOL	<0.01	
2,6-DINITROTOLUENE	<0.01	
2-CHLORONAPHTHALENE	<0.01	
2-CHLOROPHENOL	<0.01	
2-METHYLNAPHTHALENE	<0.01	
2-METHYLPHENOL (O-CRESOL)	<0.01	
2-NAPHTHYLAMINE	<0.01	
2-NITROANILINE	<0.01	
2-NITROPHENOL	<0.01	
2-PICOLINE	<0.01	
3,3-DICHLOROBENZIDINE	<0.02	
3-METHYLCHOLANTHRENE	<0.1	
3-NITROANILINE	<0.01	
4,6-DINITRO-2-METHYLPHENOL	<0.05	
4-AMINOBIPHENYL	<0.01	
4-BROMOPHENYL PHENYL ETHER	<0.01	
4-CHLORO-3-METHYLPHENOL	<0.01	
4-CHLORO-2-METHYLPHENOL	<0.01	
4-CHLOROPHENOL	<0.01	
4-CHLOROPHENYL PHENYL ETHER	<0.01	
4-METHYLPHENOL/3-METHYLPHENOL	<0.01	
4-NITROANILINE	<0.01	
4-NITROPHENOL	<0.0005	
7,12-DIMETHYLBENZENE (A) ANTHRACENE	<0.01	
A,A-DIMETHYLPHENETHYLAMINE	ND	
ACENAPHTHENE	<0.01	
ACENAPHTHYLENE	<0.01	
ACETOPHENONE	<0.01	
ANILINE	<0.01	
ANTHRACENE	<0.01	
ARAMITE	<0.01	
1,2-DIPHENYLHYDRAZINE (AZOBENZENE)	<0.01	
BENZIDINE	<0.02	
BENZO (A) ANTHRACENE	<0.01	
BENZO (A) PYRENE	<0.01	
BENZO (B) FLUORANTHENE	<0.01	
BENZO (GHI) PERYLENE	<0.01	
BENZO (K) FLUORANTHENE	<0.01	
BENZYL ALCOHOL	<0.01	
BIS (2-CHLOROETHOXY) METHANE	<0.01	
BIS (2-CHLOROETHYL) ETHER	<0.01	
BIS (2-CHLOROISOPROPYL) ETHER	<0.01	
BIS (2-ETHYLHEXYL) PHTHALATE	<0.01	
BUTYL BENZYL PHTHALATE	<0.01	
CHRYSENE	<0.01	
DI-N-BUTYLPHTHALATE	<0.01	
DI-N-OCTYLPHTHALATE	<0.01	
DIBENZO (A,H) ANTHRACENE	<0.01	
DIBENZOFURAN	<0.01	
DIETHYLPHTHALATE	<0.01	
3,3'-DIMETHYLBENZIDINE	<0.01	
DIMETHYLPHTHALATE	<0.01	
DINOSEB	<0.001	

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TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	HL-94-2	HL-94-2	
SAMPLE DATE	04/08/94	11/18/94	
SAMPLE TIME	11:30	11:00	
LAB	EL	EL	
LAB NUMBER	94-13577	94-58160	
SAMPLE NUMBER	HL-9404-106	HL-9411-107	
-- SEMI-VOLATILE EXTRACTABLES --			
DIPHENYLAMINE	<0.01		
ETHYL METHANESULFONATE	<0.01		
FAMPHUR	<0.01		
FLUORANTHENE	<0.01		
FLUORENE	<0.01		
2-ACETYL AMINO FLUORENE	<0.01		
HEXACHLOROBENZENE	<0.01		
HEXACHLOROBUTADIENE	<0.001		
HEXACHLOROCYCLOPENTADIENE	<0.01		
HEXACHLOROETHANE	<0.01		
HEXACHLOROPHENE	ND		
HEXACHLOROPHROPENE	<0.01		
INDENO (1,2,3-CD) PYRENE	<0.01		
ISODRIN	<0.0001		
ISOPHORONE	<0.01		
KEPONE	<0.001		
ISOSAFROLE	<0.01		
METHYL METHANESULFONATE	<0.01		
5-NITRO-O-TOLUIDINE	<0.01		
N-NITROSO-DI-N-BUTYLAMINE	<0.01		
N-NITROSO-DI-N-PROPYLAMINE	<0.01		
N-NITROSODIMETHYLAMINE	<0.01		
N-NITROSODIPHENYLAMINE	<0.01		
N-NITROSOPIPERIDINE	<0.01		
N-NITROSODIETHYLAMINE	<0.01		
N-NITROSOPYRROLIDINE	<0.01		
O-TOLUIDINE	<0.01		
N-NITROSOMORPHOLINE	<0.01		
N-NITROSOMETHYLETHYLAMINE	<0.01		
NAPHTHALENE	<0.001		
NITROBENZENE	<0.01		
4-NITROQUINOLINE-N-OXIDE	<0.1		
P-CHLOROTOLUENE	<0.01		
P-CHLOROANILINE	<0.01		
P-DIMETHYLAMINOAZOBENZENE	<0.01		
1,4-NAPHTHOQUINONE	<0.1		
PARATHION	<0.01		
PENTACHLOROBENZENE	<0.01		
PENTACHLORONITROBENZENE	<0.01		
PENTACHLOROPHENOL	<0.0005		
PHENACETIN	<0.01		
PHENANTHRENE	<0.01		
PHENOL	<0.01		
O,O,O-TRIETHYLPHOSPHOROTHIOATE	<0.01		
PYRENE	<0.01		
PYRIDINE	<0.02		
SAFROLE	<0.01		
THIONAZIN	<0.01		
-- HYDROCARBONS --			
M+P-XYLENE	<0.001		
M+P-XYLENE		<0.001	
ACIFLOURFEN	<0.0005		
BENTAZON	<0.0025		
CHLORAMBEN	<0.0005		
DACTHAL	<0.001		
DALAPON	<0.01		

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TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	HL-94-2	HL-94-2
SAMPLE DATE	04/08/94	11/18/94
SAMPLE TIME	11:30	11:00
LAB	EL	EL
LAB NUMBER	94-13577	94-58160
SAMPLE NUMBER	HL-9404-106	HL-9411-107
-- HYDROCARBONS --		
DICAMBA	<0.00025	
DICHLORPROP	<0.001	
AROCLOR 1016	<0.001	
AROCLOR 1221	<0.002	
AROCLOR 1232	<0.001	
AROCLOR 1242	<0.001	
AROCLOR 1248	<0.001	
AROCLOR 1254	<0.001	
AROCLOR 1260	<0.001	
AROCLOR 1262	<0.001	
AROCLOR 1268	<0.001	
2,4-D	<0.001	
2,4-DB	<0.0025	
DIALLATE (AVADEX)	<0.01	
3,5-DICHLOROBEZOIC ACID	<0.0005	
DIMETHOATE (CYGON)	<0.1	
DISULFOTON	<0.01	
MCPA	<0.2	
MCPP	<0.2	
METHYL PARATHION (PENNCAP-M)	<0.01	
PHORATE (THIMET)	<0.01	
SULFOTEP	<0.01	
2,4,5-T	<0.0002	
2,4,5-TP (SILVEX)	<0.0002	
-- OTHER PARAMETERS --		
4;4'-DDD	<0.0001	
4;4'-DDE	<0.0001	
4;4'-DDT	<0.0001	
ALDRIN	<0.00005	
ALPHA-BHC	<0.00005	
BETA-BHC	<0.00005	
GAMMA-CHLORDANE	<0.00005	
CYANIDE (CN) TOT	<0.005	<0.005
DELTA-BHC	<0.00005	
DIELDRIN	<0.0001	
ENDOSULFAN I	<0.00005	
ENDOSULFAN II	<0.0001	
ENDOSULFAN SULFATE	<0.0001	
ENDRIN	<0.0001	
ENDRIN ALDEHYDE	<0.0001	
ENDRIN KETONE	<0.0001	
GAMMA-BHC(LINDANE)	<0.00005	
HEPTACHLOR	<0.00005	
HEPTACHLOR EPOXIDE	<0.00005	
METHOXYCHLOR	<0.0005	
PRONAMIDE	<0.01	
SULFIDE AS S	<0.04	
CHEMICAL OXYGEN DEMAND		9.0
TOXAPHENE	<0.005	

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Sample Type: Monitoring Wells

SITE CODE	HL-94-3	HL-94-3
SAMPLE DATE	11/18/94	11/18/94
SAMPLE TIME	14:15	14:45
LAB	EL	EL
LAB NUMBER	94-58161	94-58163
REMARKS		DUPLICATE
SAMPLE NUMBER	HL-9411-108	HL-9411-114
-- PHYSICAL PARAMETERS --		
DEPTH TO WATER LEVEL (FEET)	34.82	34.82
PH (FLD)	7.52	7.52
PH	7.7	7.9
SC (UMHOS/CM AT 25 C)	806.0	811.0
SC (UMHOS/CM AT 25 C) (FLD)	805.0	805.0
WATER TEMPERATURE (C) (FLD)	9.6	9.6
-- MAJOR CONSTITUENTS --		
SULFATE (SO4)	166.0	166.0
CHLORIDE (CL)	32.0	32.0
-- NUTRIENTS --		
NITRATE + NITRITE AS N	10.5	10.1
-- METALS & MINOR CONSTITUENTS --		
ANTIMONY (SB) DIS	<0.05	<0.05
ARSENIC (AS) DIS	<0.005	<0.005
BARIUM (BA) DIS	<0.1	<0.1
BERYLLIUM (BE) DIS	<0.001	<0.001
CADMIUM (CD) DIS	<0.001	<0.001
CHROMIUM (CR) DIS	<0.01	<0.01
COBALT (CO) DIS	<0.01	<0.01
COPPER (CU) DIS	<0.01	<0.01
IRON (FE) DIS	<0.03	<0.03
LEAD (PB) DIS	<0.01	<0.01
MERCURY (HG) DIS	<0.001	<0.001
NICKEL (NI) DIS	<0.01	<0.01
SELENIUM (SE) DIS	<0.005	<0.005
SILVER (AG) DIS	<0.005	<0.005
THALLIUM (TL) DIS	<0.1	<0.1
VANADIUM (V) DIS	<0.1	<0.1
ZINC (ZN) DIS	<0.01	<0.01
-- VOLATILE ORGANICS --		
1,1,1,2-TETRACHLOROETHANE	<0.001	<0.001
1,1,1-TRICHLOROETHANE	<0.001	<0.001
1,1,2,2-TETRACHLOROETHANE	<0.001	<0.001
1,1,2-TRICHLOROETHANE	<0.001	<0.001
1,1-DICHLOROETHANE	<0.001	<0.001
1,1-DICHLOROETHENE	<0.001	<0.001
1,2-DIBROMOETHANE	<0.001	<0.001
1,2-DICHLOROETHANE	<0.001	<0.001
1,2-DICHLOROPROPANE	<0.001	<0.001
2-HEXANONE	<0.02	<0.02
ACETONE	<0.05	<0.05
ACRYLONITRILE	<0.02	<0.02
BENZENE	<0.001	<0.001
BROMOCHLOROMETHANE	<0.001	<0.001
BROMODICHLOROMETHANE	0.0012	0.001
BROMOFORM	<0.001	<0.001
BROMOMETHANE	<0.001	<0.001
CARBON DISULFIDE	<0.001	<0.001
CARBON TETRACHLORIDE	<0.001	<0.001
CHLOROBENZENE	<0.001	<0.001
CHLOROETHANE	<0.001	<0.001
CHLOROFORM	0.013	0.012

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Sample Type: Monitoring Wells

SITE CODE	HL-94-3	HL-94-3
SAMPLE DATE	11/18/94	11/18/94
SAMPLE TIME	14:15	14:45
LAB	EL	EL
LAB NUMBER	94-58161	94-58163
REMARKS		DUPLICATE
SAMPLE NUMBER	HL-9411-108	HL-9411-114
-- VOLATILE ORGANICS --		
CHLOROMETHANE	<0.001	<0.001
CIS-1,2-DICHLOROETHENE	<0.001	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001	<0.001
DIBROMOCHLOROMETHANE	<0.001	<0.001
DIBROMOMETHANE	<0.001	<0.001
DICHLORODIFLUOROMETHANE	<0.001	<0.001
ETHYLBENZENE	<0.001	<0.001
IODOMETHANE	<0.001	<0.001
O-XYLENE	<0.001	<0.001
METHYL ETHYL KETONE	<0.02	<0.02
METHYL ISOBUTL KETONE	<0.02	<0.02
METHYLENE CHLORIDE	<0.001	<0.001
STYRENE	<0.001	<0.001
TETRACHLOROETHENE	<0.001	<0.001
TOLUENE	<0.001	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001	<0.001
TRICHLOROETHENE	<0.001	<0.001
TRICHLOROFLUOROMETHANE	<0.001	<0.001
VINYL ACETATE	<0.001	<0.001
VINYL CHLORIDE	<0.001	<0.001
-- SEMI-VOLATILE EXTRACTABLES --		
1,2,3-TRICHLOROPROPANE	<0.001	<0.001
1,2-DIBROMO-3-CHLOROPROPANE	<0.001	<0.001
1,2-DICHLOROBENZENE	<0.001	<0.001
TRANS-1,4-DICHLORO-2-BUTENE	<0.002	<0.002
1,4-DICHLOROBENZENE	<0.001	<0.001
-- HYDROCARBONS --		
M+P-XYLENE	<0.001	<0.001
-- OTHER PARAMETERS --		
CYANIDE (CN) TOT	<0.005	0.047
CHEMICAL OXYGEN DEMAND	6.0	5.0

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Sample Type: Monitoring Wells

SITE CODE	MPC-HL-1	MPC-HL-1	MPC-HL-1	MPC-HL-1	MPC-HL-1	MPC-HL-1	MPC-HL-1
SAMPLE DATE	05/06/92	11/19/92	05/27/93	12/16/93	04/08/94	08/24/94	11/21/94
SAMPLE TIME		11:00	11:30	12:45	13:45	14:10	09:45
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	92-16654	92-49148	93-20450	93-59630	94-13578	94-40103	94-58162
SAMPLE NUMBER	MPC-9205-101	HL-9211-108	HL-9305-105	HL-9312-105	HL-9404-107	HL-9408-105	HL-9411-113
-- PHYSICAL PARAMETERS --							
DEPTH TO WATER LEVEL (FEET)		20.9	20.68	20.21	20.88	21.1	21.28
PH (FLD)		7.32	7.69	6.53	7.4	7.2	7.28
PH	7.5	7.4	7.3	7.2			7.2
SC (UMHOS/CM AT 25 C)	1070.0	1020.0	998.0	1170.0			1130.0
SC (UMHOS/CM AT 25 C) (FLD)		1122.0	1076.0	1247.0	1168.0	984.0	1089.0
TDS - CALCULATED	738.0						
TDS (MEASURED AT 180 C)		671.0	690.0				
TOTAL SUSPENDED SOLIDS		1300.0	4040.0				
WATER TEMPERATURE (C) (FLD)		11.5	11.1	9.1	8.7	13.0	9.9
-- MAJOR CONSTITUENTS --							
TOTAL HARDNESS AS CACO3	626.0						
CALCIUM (CA) DIS	162.0	118.0	117.0				
MAGNESIUM (MG) DIS	54.0	44.0	42.0				
SODIUM (NA) DIS	29.0	27.0	27.0				
POTASSIUM (K) DIS	2.0	3.0	3.0				
TOTAL ALKALINITY AS CACO3	315.0	274.0	244.0				
BICARBONATE (HCO3)	384.0	334.0	297.0				
CARBONATE AS CO3	0.0	0.0	0.0				
SULFATE (SO4)	232.0	167.0	156.0	190.0			177.0
CHLORIDE (CL)	53.0	52.0	44.0	54.0			52.0
-- NUTRIENTS --							
AMMONIA (NH3 AS N)		<0.1	<0.1				
NITRATE (NO3-N)	12.4		12.1	10.4			
NITRATE + NITRITE AS N		11.2					11.6
-- METALS & MINOR CONSTITUENTS --							
ANTIMONY (SB) DIS				<0.05	<0.05		<0.05
ARSENIC (AS) DIS		<0.005	<0.005	<0.005	<0.005		<0.005
BARIUM (BA) DIS		<0.1	<0.1	<0.1	<0.1		<0.1
BERYLLIUM (BE) DIS				<0.001	<0.001		<0.001
CADMIUM (CD) DIS		<0.001	<0.001	0.001	<0.001		<0.001
CHROMIUM (CR) DIS		<0.01	<0.01	<0.01	<0.01		<0.01
COBALT (CO) DIS				<0.01	<0.01		<0.01
COPPER (CU) DIS				<0.01	<0.01		<0.01
IRON (FE) DIS	1.69	<0.03	<0.03	<0.03			<0.03
LEAD (PB) DIS		<0.01	<0.01	<0.01	<0.01		<0.01
MANGANESE (MN) DIS		<0.01	<0.01				
MERCURY (HG) DIS		<0.001	<0.001	<0.001	<0.001		<0.001
NICKEL (NI) DIS				<0.01	<0.01		<0.01
SELENIUM (SE) DIS		<0.005	<0.005	<0.005	<0.005		<0.005
SILVER (AG) DIS		<0.005	<0.005	<0.005	<0.005		<0.005
THALLIUM (TL) DIS				<0.1	<0.1		<0.1
TIN (SN) DIS					<0.1		
VANADIUM (V) DIS				<0.1	<0.1		<0.1
ZINC (ZN) DIS				0.08	0.02		<0.01
-- VOLATILE ORGANICS --							
ACETONITRILE METHYLCYANIDE					<0.02		
ALLYLCHLORIDE 3-CHLORO-1-PROPENE					<0.001		
1,1,1,2-TETRACHLOROETHANE	<0.0005			<0.001	<0.001	<0.001	<0.001
1,1,1-TRICHLOROETHANE	0.002	0.0026	0.0016	0.001	<0.001	<0.001	<0.001
1,1,2,2-TETRACHLOROETHANE	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,2-TRICHLOROETHANE	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-DICHLOROETHANE	0.0059	0.0062	0.0031	0.0053	0.0073	0.0057	0.0063
1,1-DICHLOROETHENE	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	MPC-HL-1	MPC-HL-1	MPC-HL-1	MPC-HL-1	MPC-HL-1	MPC-HL-1	MPC-HL-1
SAMPLE DATE	05/06/92	11/19/92	05/27/93	12/16/93	04/08/94	08/24/94	11/21/94
SAMPLE TIME		11:00	11:30	12:45	13:45	14:10	09:45
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	92-16654	92-49148	93-20450	93-59630	94-13578	94-40103	94-58162
SAMPLE NUMBER	MPC-9205-101	HL-9211-108	HL-9305-105	HL-9312-105	HL-9404-107	HL-9408-105	HL-9411-113
-- VOLATILE ORGANICS --							
1,1-DICHLOROPROPENE	<0.0005				<0.001		
1,2-DIBROMOETHANE	<0.0005			<0.001	<0.001	<0.001	<0.001
1,2-DICHLOROETHANE	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-DICHLOROPROPANE	<0.0005			<0.001	<0.001	<0.001	<0.001
2,2-DICHLOROPROPANE	<0.0005				<0.001		
2-CHLOROETHYL VINYL ETHER	<0.0005	<0.001	<0.001				
2-CHLOROTOLUENE	<0.0005						
2-HEXANONE				<0.02	<0.02	<0.02	<0.02
4-BROMOFLUOROBENZENE		<0.01	<0.01				
4-CHLOROTOLUENE	<0.0005						
ACETONE				<0.02	<0.05	<0.05	<0.05
ACROLEIN					<0.02		
ACRYLONITRILE				<0.02	<0.02	<0.02	<0.02
BENZENE	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMOBENZENE	<0.0005						
BROMOCHLOROMETHANE	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMODICHLOROMETHANE	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMOFORM	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMOMETHANE	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CARBON DISULFIDE				<0.001	<0.001	<0.001	<0.001
CARBON TETRACHLORIDE	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROBENZENE	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROETHANE	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROFORM	0.0031	0.0031	0.0018	0.0017	0.0025	0.0021	0.0022
CHLOROMETHANE	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROPRENE 2-CHLORO-1,3-BUTADIENE					<0.001		
CIS-1,2-DICHLOROETHENE	0.0009			0.0013	0.0018	0.0012	0.0011
CIS-1,3-DICHLOROPROPENE	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DIBROMOCHLOROMETHANE	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DIBROMOMETHANE	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DICHLORODIFLUOROMETHANE	<0.0005	<0.001	<0.001	0.0014	0.0034	0.0021	0.0023
ETHYL METHACRYLATE		<0.001	<0.001		<0.001		
ETHYLBENZENE	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
IODOMETHANE		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
ISOBUTANOL					<0.05		
TOTAL XYLENE	<0.0005	<0.001	<0.001				
M-P XYLENE				<0.001			
O-XYLENE				<0.001	<0.001	<0.001	<0.001
METHACRYLONITRILE					<0.02		
METHYL ETHYL KETONE					<0.02	<0.02	
METHYL ETHYL KETONE				<0.02			<0.02
METHYL ISOBUTL KETONE				<0.02	<0.02	<0.02	<0.02
METHYL METHACRYLATE					<0.002		
METHYLENE CHLORIDE	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
PROPIONITRILE ETHYLCYANIDE					<0.02		
STYRENE	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TETRACHLOROETHENE	0.011	0.011	0.0068	0.017	0.013	0.012	0.012
TOLUENE	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRANS-1,2-DICHLOROETHENE		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRICHLOROETHENE	0.0025	0.0024	0.0013	0.0024	0.0031	0.0027	0.0028
TRICHLOROFLUOROMETHANE	0.0007	<0.001	<0.001	0.0016	0.002	0.0014	0.0012
VINYL ACETATE		<0.02	<0.001	<0.001	<0.001	<0.001	<0.001
VINYL CHLORIDE	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
PICLORAM					<0.0005		
-- SEMI-VOLATILE EXTRACTABLES --							
ALPHA-CHLORDANE					<0.00005		

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TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	MPC-HL-1	MPC-HL-1	MPC-HL-1	MPC-HL-1	MPC-HL-1	MPC-HL-1	MPC-HL-1
SAMPLE DATE	05/06/92	11/19/92	05/27/93	12/16/93	04/08/94	08/24/94	11/21/94
SAMPLE TIME		11:00	11:30	12:45	13:45	14:10	09:45
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	92-16654	92-49148	93-20450	93-59630	94-13578	94-40103	94-58162
SAMPLE NUMBER	MPC-9205-101	HL-9211-108	HL-9305-105	HL-9312-105	HL-9404-107	HL-9408-105	HL-9411-113
-- SEMI-VOLATILE EXTRACTABLES --							
1,4-BENZENEDIAMINE					ND		
CHLOROBENZILATE					<0.01		
1,2,3-TRICHLOROPROPANE	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2,4,5-TETRACHLOROBENZENE					<0.01		
1,2,4-TRICHLOROBENZENE					<0.01		
1,2-DIBROMO-3-CHLOROPROPANE				<0.001	<0.001	<0.001	<0.001
1,2-DICHLOROBENZENE	<0.0005			<0.001	<1.0	<0.001	<0.001
1,3,5-TRINITROBENZENE					<0.01		
1,3-DICHLOROBENZENE	<0.0005				<1.0		
1,3-DICHLOROPROPANE	<0.0005				<0.001		
1,3-DINITROBENZENE					<0.01		
TRANS-1,4-DICHLORO-2-BUTENE				<0.002		<0.002	<0.002
1,4-DICHLORO-2-BUTENE					<0.002		
1,4-DICHLOROBENZENE	<0.0005			<0.001	<1.0	<0.001	<0.001
1,4-DIFLUOROBENZENE		<0.001	<0.001				
METHAPYRILENE					ND		
1-METHYLNAPHTHALENE					<0.01		
1-NAPHTHYLAMINE					<0.01		
2,3,4,6-TETRACHLOROPHENOL					<0.01		
2,4,5-TRICHLOROPHENOL					<0.01		
2,4,6-TRICHLOROPHENOL					<0.01		
2,4-DICHLOROPHENOL					<0.01		
2,4-DIMETHYLPHENOL					<0.01		
2,4-DINITROPHENOL					<0.05		
2,4-DINITROTOLUENE					<0.01		
2,6-DICHLOROPHENOL					<0.01		
2,6-DINITROTOLUENE					<0.01		
2-CHLORONAPHTHALENE					<0.01		
2-CHLOROPHENOL					<0.01		
2-METHYLNAPHTHALENE					<0.01		
2-METHYLPHENOL (O-CRESOL)					<0.01		
2-NAPHTHYLAMINE					<0.01		
2-NITROANILINE					<0.01		
2-NITROPHENOL					<0.01		
2-PICOLINE					<0.01		
3,3-DICHLOROBENZIDINE					<0.02		
3-METHYLCHOLANTHRENE					<0.1		
3-NITROANILINE					<0.01		
4,6-DINITRO-2-METHYLPHENOL					<0.05		
4-AMINOBIPHENYL					<0.01		
4-BROMOPHENYL PHENYL ETHER					<0.01		
4-CHLORO-3-METHYLPHENOL					<0.01		
4-CHLORO-2-METHYLPHENOL					<0.01		
4-CHLOROPHENOL					<0.01		
4-CHLOROPHENYL PHENYL ETHER					<0.01		
4-METHYLPHENOL/3-METHYLPHENOL					<0.01		
4-NITROANILINE					<0.01		
4-NITROPHENOL					<0.00005		
7,12-DIMETHYLBENZENE (A) ANTHRACENE					<0.01		
A,A-DIMETHYLPHENETHYLAMINE					ND		
ACENAPHTHENE					<0.01		
ACENAPHTHYLENE					<0.01		
ACETOPHENONE					<0.01		
ANILINE					<0.01		
ANTHRACENE					<0.01		
ARAMITE					<0.01		
1,2-DIPHENYLHYDRAZINE (AZOBENZENE)					<0.01		

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TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	MPC-HL-1	MPC-HL-1	MPC-HL-1	MPC-HL-1	MPC-HL-1	MPC-HL-1	MPC-HL-1
SAMPLE DATE	05/06/92	11/19/92	05/27/93	12/16/93	04/08/94	08/24/94	11/21/94
SAMPLE TIME		11:00	11:30	12:45	13:45	14:10	09:45
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	92-16654	92-49148	93-20450	93-59630	94-13578	94-40103	94-58162
SAMPLE NUMBER	MPC-9205-101	HL-9211-108	HL-9305-105	HL-9312-105	HL-9404-107	HL-9408-105	HL-9411-113
-- SEMI-VOLATILE EXTRACTABLES --							
BENZIDINE					<0.02		
BENZO (A) ANTHRACENE					<0.01		
BENZO (A) PYRENE					<0.01		
BENZO (B) FLUORANTHENE					<0.01		
BENZO (GHI) PERYLENE					<0.01		
BENZO (K) FLUORANTHENE					<0.01		
BENZYL ALCOHOL					<0.01		
BIS (2-CHLOROETHOXY) METHANE					<0.01		
BIS (2-CHLOROETHYL) ETHER					<0.01		
BIS (2-CHLOROISOPROPYL) ETHER					<0.01		
BIS (2-ETHYLHEXYL) PHTHALATE					<0.01		
BUTYL BENZYL PHTHALATE					<0.01		
CHRYSENE					<0.01		
DI-N-BUTYLPHTHALATE					<0.01		
DI-N-OCTYLPHTHALATE					<0.01		
DIBENZO (A,H) ANTHRACENE					<0.01		
DIBENZOFURAN					<0.01		
DIETHYLPHTHALATE					<0.01		
3,3'-DIMETHYLBENZIDINE					<0.01		
DIMETHYLPHTHALATE					<0.01		
DINOSEB					<0.001		
DIPHENYLAMINE					<0.01		
ETHYL METHANESULFONATE					<0.01		
FAMPHUR					<0.01		
FLUORANTHENE					<0.01		
FLUORENE					<0.01		
2-ACETYL AMINO FLUORENE					<0.01		
HEXACHLOROBENZENE					<0.01		
HEXACHLOROBUTADIENE					<0.00001		
HEXACHLOROCYCLOPENTADIENE					<0.01		
HEXACHLOROETHANE					<0.01		
HEXACHLOROPHENE					ND		
HEXACHLOROPHROPENE					<0.01		
INDENO (1,2,3-CD) PYRENE					<0.01		
ISODRIN					<0.0001		
ISOPHORONE					<0.01		
KEPONE					<0.001		
ISOSAFROLE					<0.01		
METHYL METHANESULFONATE					<0.01		
5-NITRO-O-TOLUIDINE					<0.01		
N-NITROSO-DI-N-BUTYLAMINE					<0.01		
N-NITROSO-DI-N-PROPYLAMINE					<0.01		
N-NITROSODIMETHYLAMINE					<0.01		
N-NITROSODIPHENYLAMINE					<0.01		
N-NITROSOPIPERIDINE					<0.01		
N-NITROSODIETHYLAMINE					<0.01		
N-NITROSOPYRROLIDINE					<0.01		
O-TOLUIDINE					<0.01		
N-NITROSOMORPHOLINE					<0.01		
N-NITROSOMETHYLETHYLAMINE					<0.01		
NAPHTHALENE				<0.001	<1.0		
NITROBENZENE					<0.01		
4-NITROQUINOLINE-N-OXIDE					<0.1		
P-CHLOROTOLUENE					<0.01		
P-CHLOROANILINE					<0.01		
P-DIMETHYLAMINOAZOBENZENE					<0.01		
1,4-NAPHTHOQUINONE					<0.1		

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Sample Type: Monitoring Wells

SITE CODE	MPC-HL-1	MPC-HL-1	MPC-HL-1	MPC-HL-1	MPC-HL-1	MPC-HL-1	MPC-HL-1
SAMPLE DATE	05/06/92	11/19/92	05/27/93	12/16/93	04/08/94	08/24/94	11/21/94
SAMPLE TIME		11:00	11:30	12:45	13:45	14:10	09:45
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	92-16654	92-49148	93-20450	93-59630	94-13578	94-40103	94-58162
SAMPLE NUMBER	MPC-9205-101	HL-9211-108	HL-9305-105	HL-9312-105	HL-9404-107	HL-9408-105	HL-9411-113
-- SEMI-VOLATILE EXTRACTABLES --							
PARATHION					<0.01		
PENTACHLOROBENZENE					<0.01		
PENTACHLORONITROBENZENE					<0.01		
PENTACHLOROPHENOL					<0.05		
PHENACETIN					<0.01		
PHENANTHRENE					<0.01		
PHENOL					<0.01		
O,O,O-TRIETHYLPHOSPHOROTHIOATE					<0.01		
PYRENE					<0.01		
PYRIDINE					<0.02		
SAFROLE					<0.01		
THIONAZIN					<0.01		
-- HYDROCARBONS --							
M+P-XYLENE					<0.001		
M+P-XYLENE						<0.001	<0.001
ACIFLOURFEN					<0.0005		
BENTAZON					<0.0025		
CHLORAMBEN					<0.0005		
DACTHAL					<0.001		
DALAPON					<0.01		
DICAMBA					<0.00025		
DICHLORPROP					<0.001		
AROCLOR 1016					<0.001		
AROCLOR 1221					<0.002		
AROCLOR 1232					<0.001		
AROCLOR 1242					<0.001		
AROCLOR 1248					<0.001		
AROCLOR 1254					<0.001		
AROCLOR 1260					<0.001		
AROCLOR 1262					<0.001		
AROCLOR 1268					<0.001		
2,4-D					<0.001		
2,4-DB					<0.0025		
DIALLATE (AVADEX)					<0.01		
3,5-DICHLOROBEZOIC ACID					<0.0005		
DIMETHOATE (CYGON)					<0.1		
DISULFOTON					<0.01		
MCPA					<0.2		
MCPP					<0.2		
METHYL PARATHION (PENNCAP-M)					<0.01		
PHORATE (THIMET)					<0.01		
SULFOTEP					<0.01		
2,4,5-T					<0.0002		
2,4,5-TP (SILVEX)					<0.0002		
-- OTHER PARAMETERS --							
4;4'-DDD					<0.0001		
4;4'-DDE					<0.0001		
4;4'-DDT					<0.0001		
ALDRIN					<0.00005		
ALPHA-BHC					<0.00005		
BETA-BHC					<0.00005		
GAMMA-CHLORDANE					<0.00005		
CYANIDE (CN) TOT		<0.005	0.03	0.033	0.04		0.042
DELTA-BHC					<0.00005		
DIELDRIN					<0.0001		

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Sample Type: Monitoring Wells

SITE CODE	MPC-HL-1	MPC-HL-1	MPC-HL-1	MPC-HL-1	MPC-HL-1	MPC-HL-1	MPC-HL-1
SAMPLE DATE	05/06/92	11/19/92	05/27/93	12/16/93	04/08/94	08/24/94	11/21/94
SAMPLE TIME		11:00	11:30	12:45	13:45	14:10	09:45
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	92-16654	92-49148	93-20450	93-59630	94-13578	94-40103	94-58162
SAMPLE NUMBER	MPC-9205-101	HL-9211-108	HL-9305-105	HL-9312-105	HL-9404-107	HL-9408-105	HL-9411-113
-- OTHER PARAMETERS --							
ENDOSULFAN I					<0.00005		
ENDOSULFAN II					<0.0001		
ENDOSULFAN SULFATE					<0.0001		
ENDRIN					<0.0001		
ENDRIN ALDEHYDE					<0.0001		
ENDRIN KETONE					<0.0001		
GAMMA-BHC(LINDANE)					<0.00005		
HEPTACHLOR					<0.00005		
HEPTACHLOR EPOXIDE					<0.00005		
METHOXYCHLOR					<0.0005		
PRONAMIDE					<0.01		
SULFIDE AS S					0.04		
CHEMICAL OXYGEN DEMAND	<1.0	11.0	<1.0	<1.0			4.0
TOXAPHENE					<0.005		

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Sample Type: Monitoring Wells

SITE CODE	MPC-HL-2	MPC-HL-2	MPC-HL-2	MPC-HL-2	MPC-HL-2	MPC-HL-2
SAMPLE DATE	05/06/92	11/19/92	05/27/93	12/16/93	08/24/94	12/20/94
SAMPLE TIME		09:30	10:30	11:30	13:30	11:00
LAB	EL	HYDRO	EL	EL	EL	EL
LAB NUMBER	92-16655		93-20449	93-59629	94-40104	94-61430
REMARKS		NO SAMPLE				
SAMPLE NUMBER	MPC-9205-102	HL-9211-107	HL-9305-106	HL-9312-106	HL-9408-106	HL-9412-111
-- PHYSICAL PARAMETERS --						
DEPTH TO WATER LEVEL (FEET)		16.06	15.67	16.01	16.01	16.18
PH (FLD)		7.36	7.74	7.51	7.31	
PH	7.7		7.6	7.2		
SC (UMHOS/CM AT 25 C)	632.0		634.0	793.0		
SC (UMHOS/CM AT 25 C) (FLD)		619.0	614.0	814.0	431.0	
TDS - CALCULATED	378.0					
TDS (MEASURED AT 180 C)			390.0			
TOTAL SUSPENDED SOLIDS			3100.0			
WATER TEMPERATURE (C) (FLD)		13.0	9.4	10.6	15.6	
-- MAJOR CONSTITUENTS --						
TOTAL HARDNESS AS CACO3	323.0					
CALCIUM (CA) DIS	93.0		82.0			
MAGNESIUM (MG) DIS	22.0		20.0			
SODIUM (NA) DIS	16.0		17.0			
POTASSIUM (K) DIS	3.0		4.0			
TOTAL ALKALINITY AS CACO3	262.0		219.0			
BICARBONATE (HCO3)	320.0		268.0			
CARBONATE AS CO3	0.0		0.0			
SULFATE (SO4)	51.0		52.0	60.0		
CHLORIDE (CL)	33.0		36.0	38.0		
-- NUTRIENTS --						
AMMONIA (NH3 AS N)			0.2			
NITRATE (NO3-N)	<0.05		<0.05	<0.05		
-- METALS & MINOR CONSTITUENTS --						
ANTIMONY (SB) DIS				<0.05		
ARSENIC (AS) DIS			0.017	0.025		
BARIUM (BA) DIS			0.1	0.1		
BERYLLIUM (BE) DIS				<0.001		
CADMIUM (CD) DIS			<0.001	<0.001		
CHROMIUM (CR) DIS			<0.01	<0.01		
COBALT (CO) DIS				<0.01		
COPPER (CU) DIS				<0.01		
IRON (FE) DIS	1.6		0.27	0.66		
LEAD (PB) DIS			<0.01	<0.01		
MANGANESE (MN) DIS			1.1			
MERCURY (HG) DIS			<0.001	<0.001		
NICKEL (NI) DIS				<0.01		
SELENIUM (SE) DIS			<0.005	<0.005		
SILVER (AG) DIS			<0.005	<0.005		
THALLIUM (TL) DIS				<0.1		
VANADIUM (V) DIS				<0.1		
ZINC (ZN) DIS				0.02		
-- VOLATILE ORGANICS --						
1,1,1,2-TETRACHLOROETHANE	<0.0005			<0.001	<0.001	<0.001
1,1,1-TRICHLOROETHANE	<0.0005		<0.002	<0.001	<0.001	<0.001
1,1,2,2-TETRACHLOROETHANE	<0.0005		<0.002	<0.001	<0.001	<0.001
1,1,2-TRICHLOROETHANE	<0.0005		<0.002	<0.001	<0.001	<0.001
1,1-DICHLOROETHANE	0.0006		<0.002	<0.001	<0.001	<0.001
1,1-DICHLOROETHENE	<0.0005		<0.002	<0.001	<0.001	<0.001
1,1-DICHLOROPROPENE	<0.0005					
1,2-DIBROMOETHANE	<0.0005			<0.001	<0.001	<0.001
1,2-DICHLOROETHANE	<0.0005		<0.002	<0.001	<0.001	<0.001

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Sample Type: Monitoring Wells

SITE CODE	MPC-HL-2	MPC-HL-2	MPC-HL-2	MPC-HL-2	MPC-HL-2	MPC-HL-2
SAMPLE DATE	05/06/92	11/19/92	05/27/93	12/16/93	08/24/94	12/20/94
SAMPLE TIME		09:30	10:30	11:30	13:30	11:00
LAB	EL	HYDRO	EL	EL	EL	EL
LAB NUMBER	92-16655		93-20449	93-59629	94-40104	94-61430
REMARKS		NO SAMPLE				
SAMPLE NUMBER	MPC-9205-102	HL-9211-107	HL-9305-106	HL-9312-106	HL-9408-106	HL-9412-111
-- VOLATILE ORGANICS --						
1,2-DICHLOROPROPANE	<0.0005			<0.001	<0.001	<0.001
2,2-DICHLOROPROPANE	<0.0005					
2-CHLOROETHYL VINYL ETHER	<0.0005		<0.002			
2-CHLOROTOLUENE	<0.0005					
2-HEXANONE				<0.02	<0.02	<0.02
4-BROMOFLUOROBENZENE			<0.02			
4-CHLOROTOLUENE	<0.0005					
ACETONE				<0.02	<0.05	<0.05
ACRYLONITRILE				<0.02	<0.02	<0.02
BENZENE	<0.0005		<0.002	<0.001	<0.001	<0.001
BROMOBENZENE	<0.0005					
BROMOCHLOROMETHANE	<0.0005		<0.002	<0.001	<0.001	<0.001
BROMODICHLOROMETHANE	<0.0005		<0.002	<0.001	<0.001	<0.001
BROMOFORM	<0.0005		<0.002	<0.001	<0.001	<0.001
BROMOMETHANE	<0.0005		<0.002	<0.001	<0.001	<0.001
CARBON DISULFIDE				<0.001	<0.001	<0.001
CARBON TETRACHLORIDE	<0.0005		<0.002	<0.001	<0.001	<0.001
CHLOROBENZENE	<0.0005		<0.002	<0.001	<0.001	<0.001
CHLOROETHANE	<0.0005		<0.002	<0.001	<0.001	<0.001
CHLOROFORM	<0.0005		<0.002	<0.001	<0.001	<0.001
CHLOROMETHANE	<0.0005		<0.002	<0.001	<0.001	<0.001
CIS-1,2-DICHLOROETHENE	<0.0005			<0.001	<0.001	<0.001
CIS-1,3-DICHLOROPROPENE	<0.0005		<0.002	<0.001	<0.001	<0.001
DIBROMOCHLOROMETHANE	<0.0005		<0.002	<0.001	<0.001	<0.001
DIBROMOMETHANE	<0.0005		<0.002	<0.001	<0.001	<0.001
DICHLORODIFLUOROMETHANE	<0.0005		<0.002	<0.001	<0.001	<0.001
ETHYL METHACRYLATE			<0.002			
ETHYLBENZENE	<0.0005		<0.002	<0.001	<0.001	<0.001
IODOMETHANE			<0.002	<0.001	<0.001	<0.001
TOTAL XYLENE	<0.0005		<0.002			
M-P XYLENE				<0.001		
O-XYLENE				<0.001	<0.001	<0.001
METHYL ETHYL KETONE					<0.02	
METHYL ETHYL KETONE				<0.02		<0.02
METHYL ISOBUTL KETONE				<0.02	<0.02	<0.02
METHYLENE CHLORIDE	<0.0005		<0.002	<0.001	<0.001	<0.001
STYRENE	<0.0005		<0.002	<0.001	<0.001	<0.001
TETRACHLOROETHENE	<0.0005		<0.002	<0.001	<0.001	<0.001
TOLUENE	<0.0005		<0.002	<0.001	<0.001	<0.001
TRANS-1,2-DICHLOROETHENE			<0.002	<0.001	<0.001	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.0005		<0.002	<0.001	<0.001	<0.001
TRICHLOROETHENE	<0.0005		<0.002	<0.001	<0.001	<0.001
TRICHLOROFLUOROMETHANE	<0.0005		<0.002	<0.001	<0.001	<0.001
VINYL ACETATE			<0.002	<0.001	<0.001	<0.001
VINYL CHLORIDE	<0.0005		<0.002	<0.001	<0.001	<0.001
-- SEMI-VOLATILE EXTRACTABLES --						
1,2,3-TRICHLOROPROPANE	<0.0005		<0.002	<0.001	<0.001	<0.001
1,2-DIBROMO-3-CHLOROPROPANE				<0.001	<0.001	<0.001
1,2-DICHLOROBENZENE	<0.0005			<0.001	<0.001	<0.001
1,3-DICHLOROBENZENE	<0.0005					
1,3-DICHLOROPROPANE	<0.0005					
TRANS-1,4-DICHLORO-2-BUTENE				<0.002	<0.002	<0.002
1,4-DICHLOROBENZENE	<0.0005			<0.001	<0.001	<0.001
1,4-DIFLUOROBENZENE			<0.002			
NAPHTHALENE				<0.001		

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Monitoring Wells

SITE CODE	MPC-HL-2	MPC-HL-2	MPC-HL-2	MPC-HL-2	MPC-HL-2	MPC-HL-2
SAMPLE DATE	05/06/92	11/19/92	05/27/93	12/16/93	08/24/94	12/20/94
SAMPLE TIME		09:30	10:30	11:30	13:30	11:00
LAB	EL	HYDRO	EL	EL	EL	EL
LAB NUMBER	92-16655		93-20449	93-59629	94-40104	94-61430
REMARKS		NO SAMPLE				
SAMPLE NUMBER	MPC-9205-102	HL-9211-107	HL-9305-106	HL-9312-106	HL-9408-106	HL-9412-111
-- HYDROCARBONS --						
M+P-XYLENE					<0.001	<0.001
-- OTHER PARAMETERS --						
CYANIDE (CN) TOT			<0.005	<0.005		
CHEMICAL OXYGEN DEMAND	<1.0		10.0	<1.0		

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	5	5	5	5	5	5
SAMPLE DATE	04/13/91	12/02/92	11/11/93	01/05/94	04/18/94	12/08/94
SAMPLE TIME	13:00	12:05		11:45	11:50	12:00
LAB	EL	EL	EL	EL	EL	EL
LAB NUMBER	91-13087	92-50587	93-21827	94-3538	94-16470	94-60433
SAMPLE NUMBER	HL-9104-110	HL-9212-906	HL-8	HL-105C1	HL-9	HL-9412-104
-- VOLATILE ORGANICS --						
1,1,1,2-TETRACHLOROETHANE				<0.001	<0.001	<0.001
1,1,1-TRICHLOROETHANE	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,2,2-TETRACHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,2-TRICHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-DICHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-DICHLOROETHENE	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-DIBROMOETHANE				<0.001	<0.001	<0.001
1,2-DICHLOROETHANE	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-DICHLOROPROPANE				<0.001	<0.001	<0.001
2-BUTANONE (METHYL-ETHYL-KETONE)	<0.01					
2-CHLOROETHYL VINYL ETHER	<0.01	<0.001	<0.001			
2-HEXANONE	<0.01			<0.02	<0.02	<0.02
4-BROMOFLUOROBENZENE	<0.01	<0.01	<0.01			
4-METHYL-2-PENTANONE	<0.01					
ACETONE	<0.01			<0.02	<0.05	<0.05
ACROLEIN	<0.01					
ACRYLONITRILE	<0.01			<0.02	<0.02	<0.02
BENZENE	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001
BROMOCHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMODICHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMOFORM	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMOMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CARBON DISULFIDE	<0.01			<0.001	<0.001	<0.001
CARBON TETRACHLORIDE	<0.0005	<0.001	0.0021	<0.001	<0.001	<0.001
CHLOROBENZENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROFORM	0.0023	0.0017	0.0024	0.0011	0.001	0.0016
CHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CIS-1,2-DICHLOROETHENE				<0.001	<0.001	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DIBROMOCHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DIBROMOMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DICHLORODIFLUOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DICHLOROFLUOROMETHANE				0.01	<0.001	
ETHANOL	<0.01					
ETHYL METHACRYLATE	<0.01	<0.001	<0.001			
ETHYLBENZENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
IODOMETHANE	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001
TOTAL XYLENE	<0.001	<0.001	<0.001	<0.001		
O-XYLENE				<0.001	<0.001	<0.001
METHYL ETHYL KETONE				<0.02	<0.02	<0.02
METHYL ISOBUTL KETONE				<0.02	<0.02	<0.02
METHYLENE CHLORIDE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
STYRENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TETRACHLOROETHENE	0.0005	<0.001	0.0013	0.0012	0.0012	<0.001
TOLUENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRICHLOROETHENE	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001
TRICHLOROFLUOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
VINYL ACETATE	<0.01	<0.02	<0.001	<0.001	<0.001	<0.001
VINYL CHLORIDE	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001
-- SEMI-VOLATILE EXTRACTABLES --						
1,2,3-TRICHLOROPROPANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-DIBROMO-3-CHLOROPROPANE				<0.001	<0.001	<0.001
1,2-DICHLOROBENZENE				<0.001	<0.001	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	5	5	5	5	5	5
SAMPLE DATE	04/13/91	12/02/92	11/11/93	01/05/94	04/18/94	12/08/94
SAMPLE TIME	13:00	12:05		11:45	11:50	12:00
LAB	EL	EL	EL	EL	EL	EL
LAB NUMBER	91-13087	92-50587	93-21827	94-3538	94-16470	94-60433
SAMPLE NUMBER	HL-9104-110	HL-9212-906	HL-8	HL-105C1	HL-9	HL-9412-104
-- SEMI-VOLATILE EXTRACTABLES --						
TRANS-1,4-DICHLORO-2-BUTENE					<0.002	<0.002
1,4-DICHLORO-2-BUTENE	<0.01			<0.002	<0.002	
1,4-DICHLOROBENZENE				<0.001	<0.001	<0.001
1,4-DIFLUOROBENZENE	<0.01	<0.001	<0.001			
NAPHTHALENE				<0.001		
-- HYDROCARBONS --						
M+P-XYLENE					<0.001	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	9
SAMPLE DATE	06/06/90
SAMPLE TIME	12:10
LAB	EL
LAB NUMBER	90-15042
SAMPLE NUMBER	HL-9006-104
-- VOLATILE ORGANICS --	
1,1,1,2-TETRACHLOROETHANE	<0.001
1,1,1-TRICHLOROETHANE	<0.0005
1,1,2,2-TETRACHLOROETHANE	<0.001
1,1,2-TRICHLOROETHANE	<0.001
1,1-DICHLOROETHANE	<0.001
1,1-DICHLOROETHENE	<0.0005
1,1-DICHLOROPROPENE	<0.001
1,2-DIBROMOETHANE	<0.001
1,2-DICHLOROETHANE	<0.0005
1,2-DICHLOROPROPANE	<0.001
2,2-DICHLOROPROPANE	<0.001
2-CHLOROTOLUENE	<0.001
4-CHLOROTOLUENE	<0.001
BENZENE	<0.0005
BROMOBENZENE	<0.001
BROMOCHLOROMETHANE	<0.001
BROMODICHLOROMETHANE	<0.001
BROMOFORM	<0.001
BROMOMETHANE	<0.001
CARBON TETRACHLORIDE	<0.0005
CHLOROBENZENE	<0.001
CHLOROETHANE	<0.001
CHLOROFORM	<0.001
CHLOROMETHANE	<0.001
CIS-1,2-DICHLOROETHENE	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001
DIBROMOCHLOROMETHANE	<0.001
DIBROMOMETHANE	<0.001
DICHLORODIFLUOROMETHANE	<0.001
ETHYLBENZENE	<0.001
M-XYLENE	<0.001
O-XYLENE	<0.001
P-XYLENE	<0.001
METHYLENE CHLORIDE	<0.001
STYRENE	<0.001
TETRACHLOROETHENE	<0.0005
TOLUENE	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001
TRICHLOROETHENE	<0.0005
TRICHLOROFLUOROMETHANE	<0.001
VINYL CHLORIDE	<0.0005
-- SEMI-VOLATILE EXTRACTABLES --	
1,2,3-TRICHLOROBENZENE	<0.001
1,2,3-TRICHLOROPROPANE	<0.001
1,2,4-TRICHLOROBENZENE	<0.001
1,2,4-TRIMETHYLBENZENE	<0.001
1,2-DIBROMO-3-CHLOROPROPANE	<0.001
1,2-DICHLOROBENZENE	<0.001
1,3,5-TRIMETHYLBENZENE	<0.001
1,3-DICHLOROBENZENE	<0.001
1,3-DICHLOROPROPANE	<0.001
1,4-DICHLOROBENZENE	<0.0005
DICHLOROMONOFLUOROMETHANE	<0.001
HEXACHLOROBUTADIENE	<0.001
ISOPROPYLBENZENE	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	9
SAMPLE DATE	06/06/90
SAMPLE TIME	12:10
LAB	EL
LAB NUMBER	90-15042
SAMPLE NUMBER	HL-9006-104
-- SEMI-VOLATILE EXTRACTABLES --	
N-BUTYLBENZENE	<0.001
N-PROPYLBENZENE	<0.001
NAPHTHALENE	<0.001
P-ISOPROPYLTOLUENE	<0.001
SEC-BUTYLBENZENE	<0.001
TERT-BUTYLBENZENE	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	13	13	13	13	13	13	13
SAMPLE DATE	02/16/90	05/04/90	04/04/91	01/22/92	05/20/92	12/01/92	05/26/93
SAMPLE TIME	09:30	09:30	11:30	14:30	09:30	13:40	
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	90-3298	90-10822	91-12763	92-4692	92-19276	92-50584	93-21825
SAMPLE NUMBER	HL-90-10	HL-9005-105	HL-9104-100	HL-9201-109	HL-9205-105	HL-9212-903	HL-6
-- VOLATILE ORGANICS --							
1,1,1,2-TETRACHLOROETHANE	<0.001	<0.001					
1,1,1-TRICHLOROETHANE	0.00078	0.00079	0.00088	0.001	0.0005	<0.001	<0.001
1,1,2,2-TETRACHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,2-TRICHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-DICHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-DICHLOROETHENE	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001
1,1-DICHLOROPROPENE	<0.001	<0.001					
1,2-DIBROMOETHANE	<0.001	<0.001					
1,2-DICHLOROETHANE	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001
1,2-DICHLOROPROPANE	<0.001	<0.001					
2,2-DICHLOROPROPANE	<0.001	<0.001					
2-BUTANONE (METHYL-ETHYL-KETONE)			<0.01				
2-CHLOROETHYL VINYL ETHER			<0.01	<0.01	<0.01	<0.001	<0.001
2-CHLOROTOLUENE	<0.001	<0.001					
2-HEXANONE			<0.01				
4-BROMOFLUOROBENZENE			<0.01	<0.01	<0.01	<0.01	<0.01
4-CHLOROTOLUENE	<0.001	<0.001					
4-METHYL-2-PENTANONE			<0.01				
ACETONE			<0.01				
ACROLEIN			<0.01				
ACRYLONITRILE			<0.01				
BENZENE	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001
BROMOBENZENE	<0.001	<0.001					
BROMOCHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMODICHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMOFORM	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMOMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CARBON DISULFIDE			<0.01				
CARBON TETRACHLORIDE	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001
CHLOROBENZENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROFORM	0.0029	0.0044	0.0036	0.0038	0.0024	0.0011	0.0032
CHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CIS-1,2-DICHLOROETHENE	<0.001	<0.001					
CIS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DIBROMOCHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DIBROMOMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DICHLORODIFLUOROMETHANE	0.0043	0.0023	0.0024	0.003	0.0021	<0.001	0.0025
ETHANOL			<0.01				
ETHYL METHACRYLATE			<0.01	<0.01	<0.01	<0.001	<0.001
ETHYLBENZENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
IODOMETHANE			<0.01	<0.01	<0.01	<0.001	<0.001
TOTAL XYLENE			<0.001	<0.001	<0.001	<0.001	<0.001
M-XYLENE	<0.001	<0.001					
O-XYLENE	<0.001	<0.001					
P-XYLENE	<0.001	<0.001					
METHYLENE CHLORIDE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
STYRENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TETRACHLOROETHENE	0.0027	0.0023	0.0034	0.0037	0.0022	<0.001	0.0035
TOLUENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRICHLOROETHENE	<0.0005	0.00074	0.0005	0.00054	<0.0005	<0.001	<0.001
TRICHLOROFLUOROMETHANE	<0.001	<0.001	<0.001	0.0012	<0.001	<0.001	<0.001
VINYL ACETATE			<0.01	<0.01	<0.01	<0.02	<0.001
VINYL CHLORIDE	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001
-- SEMI-VOLATILE EXTRACTABLES --							
1,2,3-TRICHLOROBENZENE	<0.001	<0.001					

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	13	13	13	13	13	13	13
SAMPLE DATE	02/16/90	05/04/90	04/04/91	01/22/92	05/20/92	12/01/92	05/26/93
SAMPLE TIME	09:30	09:30	11:30	14:30	09:30	13:40	
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	90-3298	90-10822	91-12763	92-4692	92-19276	92-50584	93-21825
SAMPLE NUMBER	HL-90-10	HL-9005-105	HL-9104-100	HL-9201-109	HL-9205-105	HL-9212-903	HL-6
-- SEMI-VOLATILE EXTRACTABLES --							
1,2,3-TRICHLOROPROPANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2,4-TRICHLOROBENZENE	<0.001	<0.001					
1,2,4-TRIMETHYLBENZENE	<0.001	<0.001					
1,2-DIBROMO-3-CHLOROPROPANE	<0.001	<0.001					
1,2-DICHLOROBENZENE	<0.001	<0.001					
1,3,5-TRIMETHYLBENZENE	<0.001	<0.001					
1,3-DICHLOROBENZENE	<0.001	<0.001					
1,3-DICHLOROPROPANE	<0.001	<0.001					
1,4-DICHLORO-2-BUTENE			<0.01				
1,4-DICHLOROBENZENE	<0.0005	<0.0005					
1,4-DIFLUOROBENZENE			<0.01	<0.01	<0.01	<0.001	<0.001
DICHLOROMONOFLUOROMETHANE	0.001	<0.0019					
HEXACHLOROBUTADIENE	<0.001	<0.001					
ISOPROPYLBENZENE	<0.001	<0.001					
N-BUTYLBENZENE	<0.001	<0.001					
N-PROPYLBENZENE	<0.001	<0.001					
NAPHTHALENE	<0.001	<0.001					
P-ISOPROPYLTOLUENE	<0.001	<0.001					
SEC-BUTYLBENZENE	<0.001	<0.001					
TERT-BUTYLBENZENE	<0.001	<0.001					

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	13	13	13	13
SAMPLE DATE	01/04/94	04/18/94	08/23/94	12/08/94
SAMPLE TIME	13:30	09:15	10:30	10:00
LAB	EL	EL	EL	EL
LAB NUMBER	94-3392	94-16463	94-40382	94-60430
SAMPLE NUMBER	HL-104J1	HL-2	HL-9408-110	HL-9412-100
-- PHYSICAL PARAMETERS --				
DEPTH TO WATER LEVEL (FEET)			PUMPING	
PH (FLD)			7.22	
SC (UMHOS/CM AT 25 C) (FLD)			967.0	
WATER TEMPERATURE (C) (FLD)			13.1	
-- VOLATILE ORGANICS --				
1,1,1,2-TETRACHLOROETHANE	<0.001	<0.001	<0.001	<0.001
1,1,1-TRICHLOROETHANE	<0.001	<0.001	<0.001	<0.001
1,1,2,2-TETRACHLOROETHANE	<0.001	<0.001	<0.001	<0.001
1,1,2-TRICHLOROETHANE	<0.001	<0.001	<0.001	<0.001
1,1-DICHLOROETHANE	<0.001	<0.001	<0.001	<0.001
1,1-DICHLOROETHENE	<0.001	<0.001	<0.001	<0.001
1,2-DIBROMOETHANE	<0.001	<0.001	<0.001	<0.001
1,2-DICHLOROETHANE	<0.001	<0.001	<0.001	<0.001
1,2-DICHLOROPROPANE	<0.001	<0.001	<0.001	<0.001
2-HEXANONE	<0.02	<0.02	<0.02	<0.02
ACETONE	<0.02	<0.05	<0.05	<0.05
ACROLEIN			<0.02	
ACRYLONITRILE	<0.02	<0.02	<0.001	<0.02
BENZENE	<0.001	<0.001	<0.001	<0.001
BROMOCHLOROMETHANE	<0.001	<0.001	<0.001	<0.001
BROMODICHLOROMETHANE	<0.001	<0.001	<0.001	<0.001
BROMOFORM	<0.001	<0.001	<0.001	<0.001
BROMOMETHANE	<0.001	<0.001	<0.001	<0.001
CARBON DISULFIDE	<0.001	<0.001	<0.001	<0.001
CARBON TETRACHLORIDE	<0.001	<0.001	<0.001	<0.001
CHLOROBENZENE	<0.001	<0.001	<0.001	<0.001
CHLOROETHANE	<0.001	<0.001	<0.001	<0.001
CHLOROFORM	0.0053	0.0041	0.0042	0.0062
CHLOROMETHANE	<0.001	<0.001	<0.001	<0.001
CIS-1,2-DICHLOROETHENE	<0.001	<0.001	<0.001	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001	<0.001
DIBROMOCHLOROMETHANE	<0.001	<0.001	<0.001	<0.001
DIBROMOMETHANE	<0.001	<0.001	<0.001	<0.001
DICHLORODIFLUOROMETHANE	0.0012	0.0022	0.0013	0.002
DICHLOROFLUOROMETHANE		0.015		
ETHYLBENZENE	<0.001	<0.001	<0.001	<0.001
IODOMETHANE	<0.001	<0.001	<0.001	<0.001
TOTAL XYLENE	<0.001			
O-XYLENE	<0.001	<0.001	<0.001	<0.001
METHYL ETHYL KETONE			<0.02	
METHYL ETHYL KETONE	<0.02	<0.02		<0.02
METHYL ISOBUTL KETONE	<0.02	<0.02	<0.02	<0.02
METHYLENE CHLORIDE	<0.001	<0.001	<0.001	<0.001
STYRENE	<0.001	<0.001	<0.001	<0.001
TETRACHLOROETHENE	0.002	0.0021	0.0022	0.0032
TOLUENE	<0.001	<0.001	0.0062	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001	<0.001	<0.001	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001	<0.001
TRICHLOROETHENE	<0.001	<0.001	<0.001	<0.001
TRICHLOROFLUOROMETHANE	<0.001	<0.001	<0.001	<0.001
VINYL ACETATE	<0.001	<0.001	<0.001	<0.001
VINYL CHLORIDE	<0.001	<0.001	<0.001	<0.001
-- SEMI-VOLATILE EXTRACTABLES --				
1,2,3-TRICHLOROPROPANE	<0.001	<0.001	<0.001	<0.001
1,2-DIBROMO-3-CHLOROPROPANE	<0.001	<0.001	<0.001	<0.005

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	13	13	13	13
SAMPLE DATE	01/04/94	04/18/94	08/23/94	12/08/94
SAMPLE TIME	13:30	09:15	10:30	10:00
LAB	EL	EL	EL	EL
LAB NUMBER	94-3392	94-16463	94-40382	94-60430
SAMPLE NUMBER	HL-104J1	HL-2	HL-9408-110	HL-9412-100
-- SEMI-VOLATILE EXTRACTABLES --				
1,2-DICHLOROBENZENE	<0.001	<0.001	<0.001	<0.001
TRANS-1,4-DICHLORO-2-BUTENE		<0.002	<0.002	<0.002
1,4-DICHLORO-2-BUTENE	<0.002	<0.002		
1,4-DICHLOROBENZENE	<0.001	<0.001	<0.001	<0.001
-- HYDROCARBONS --				
M+P-XYLENE		<0.001	<0.001	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	19
SAMPLE DATE	05/04/90
SAMPLE TIME	09:45
LAB	EL
LAB NUMBER	90-10823
SAMPLE NUMBER	HL-9005-106
-- VOLATILE ORGANICS --	
1,1,1,2-TETRACHLOROETHANE	<0.001
1,1,1-TRICHLOROETHANE	<0.0005
1,1,2,2-TETRACHLOROETHANE	<0.001
1,1,2-TRICHLOROETHANE	<0.001
1,1-DICHLOROETHANE	<0.001
1,1-DICHLOROETHENE	<0.0005
1,1-DICHLOROPROPENE	<0.001
1,2-DIBROMOETHANE	<0.001
1,2-DICHLOROETHANE	<0.0005
1,2-DICHLOROPROPANE	<0.001
2,2-DICHLOROPROPANE	<0.001
2-CHLOROTOLUENE	<0.001
4-CHLOROTOLUENE	<0.001
BENZENE	<0.0005
BROMOBENZENE	<0.001
BROMOCHLOROMETHANE	<0.001
BROMODICHLOROMETHANE	<0.001
BROMOFORM	<0.001
BROMOMETHANE	<0.001
CARBON TETRACHLORIDE	<0.0005
CHLOROBENZENE	<0.001
CHLOROETHANE	<0.001
CHLOROFORM	<0.001
CHLOROMETHANE	<0.001
CIS-1,2-DICHLOROETHENE	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001
DIBROMOCHLOROMETHANE	<0.001
DIBROMOMETHANE	<0.001
DICHLORODIFLUOROMETHANE	<0.001
ETHYLBENZENE	<0.001
M-XYLENE	<0.001
O-XYLENE	<0.001
P-XYLENE	<0.001
METHYLENE CHLORIDE	<0.001
STYRENE	<0.001
TETRACHLOROETHENE	<0.0005
TOLUENE	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001
TRICHLOROETHENE	<0.0005
TRICHLOROFLUOROMETHANE	<0.001
VINYL CHLORIDE	<0.0005
-- SEMI-VOLATILE EXTRACTABLES --	
1,2,3-TRICHLOROBENZENE	<0.001
1,2,3-TRICHLOROPROPANE	<0.001
1,2,4-TRICHLOROBENZENE	<0.001
1,2,4-TRIMETHYLBENZENE	<0.001
1,2-DIBROMO-3-CHLOROPROPANE	<0.001
1,2-DICHLOROBENZENE	<0.001
1,3,5-TRIMETHYLBENZENE	<0.001
1,3-DICHLOROBENZENE	<0.001
1,3-DICHLOROPROPANE	<0.001
1,4-DICHLOROBENZENE	<0.0005
DICHLOROMONOFLUOROMETHANE	<0.001
HEXACHLOROBUTADIENE	<0.001
ISOPROPYLBENZENE	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	19
SAMPLE DATE	05/04/90
SAMPLE TIME	09:45
LAB	EL
LAB NUMBER	90-10823
SAMPLE NUMBER	HL-9005-106
-- SEMI-VOLATILE EXTRACTABLES --	
N-BUTYLBENZENE	<0.001
N-PROPYLBENZENE	<0.001
NAPHTHALENE	<0.001
P-ISOPROPYLTOLUENE	<0.001
SEC-BUTYLBENZENE	<0.001
TERT-BUTYLBENZENE	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	20
SAMPLE DATE	05/06/90
SAMPLE TIME	11:10
LAB	EL
LAB NUMBER	90-10825
SAMPLE NUMBER	HL-9005-108
-- VOLATILE ORGANICS --	
1,1,1,2-TETRACHLOROETHANE	<0.001
1,1,1-TRICHLOROETHANE	<0.0005
1,1,2,2-TETRACHLOROETHANE	<0.001
1,1,2-TRICHLOROETHANE	<0.001
1,1-DICHLOROETHANE	<0.001
1,1-DICHLOROETHENE	<0.0005
1,1-DICHLOROPROPENE	<0.001
1,2-DIBROMOETHANE	<0.001
1,2-DICHLOROETHANE	<0.0005
1,2-DICHLOROPROPANE	<0.001
2,2-DICHLOROPROPANE	<0.001
2-CHLOROTOLUENE	<0.001
4-CHLOROTOLUENE	<0.001
BENZENE	<0.0005
BROMOBENZENE	<0.001
BROMOCHLOROMETHANE	<0.001
BROMODICHLOROMETHANE	<0.001
BROMOFORM	<0.001
BROMOMETHANE	<0.001
CARBON TETRACHLORIDE	<0.0005
CHLOROBENZENE	<0.001
CHLOROETHANE	<0.001
CHLOROFORM	<0.001
CHLOROMETHANE	<0.001
CIS-1,2-DICHLOROETHENE	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001
DIBROMOCHLOROMETHANE	<0.001
DIBROMOMETHANE	<0.001
DICHLORODIFLUOROMETHANE	<0.001
ETHYLBENZENE	<0.001
M-XYLENE	<0.001
O-XYLENE	<0.001
P-XYLENE	<0.001
METHYLENE CHLORIDE	<0.001
STYRENE	<0.001
TETRACHLOROETHENE	<0.0005
TOLUENE	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001
TRICHLOROETHENE	<0.0005
TRICHLOROFLUOROMETHANE	<0.001
VINYL CHLORIDE	<0.0005
-- SEMI-VOLATILE EXTRACTABLES --	
1,2,3-TRICHLOROBENZENE	<0.001
1,2,3-TRICHLOROPROPANE	<0.001
1,2,4-TRICHLOROBENZENE	<0.001
1,2,4-TRIMETHYLBENZENE	<0.001
1,2-DIBROMO-3-CHLOROPROPANE	<0.001
1,2-DICHLOROBENZENE	<0.001
1,3,5-TRIMETHYLBENZENE	<0.001
1,3-DICHLOROBENZENE	<0.001
1,3-DICHLOROPROPANE	<0.001
1,4-DICHLOROBENZENE	<0.0005
DICHLOROMONOFLUOROMETHANE	<0.001
HEXACHLOROBUTADIENE	<0.001
ISOPROPYLBENZENE	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	20
SAMPLE DATE	05/06/90
SAMPLE TIME	11:10
LAB	EL
LAB NUMBER	90-10825
SAMPLE NUMBER	HL-9005-108
-- SEMI-VOLATILE EXTRACTABLES --	
N-BUTYLBENZENE	<0.001
N-PROPYLBENZENE	<0.001
NAPHTHALENE	<0.001
P-ISOPROPYLTOLUENE	<0.001
SEC-BUTYLBENZENE	<0.001
TERT-BUTYLBENZENE	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	23
SAMPLE DATE	05/06/90
SAMPLE TIME	11:15
LAB	EL
LAB NUMBER	90-10826
SAMPLE NUMBER	HL-9005-109
-- VOLATILE ORGANICS --	
1,1,1,2-TETRACHLOROETHANE	<0.001
1,1,1-TRICHLOROETHANE	0.0019
1,1,2,2-TETRACHLOROETHANE	<0.001
1,1,2-TRICHLOROETHANE	<0.001
1,1-DICHLOROETHANE	0.0011
1,1-DICHLOROETHENE	<0.0005
1,1-DICHLOROPROPENE	<0.001
1,2-DIBROMOETHANE	<0.001
1,2-DICHLOROETHANE	<0.0005
1,2-DICHLOROPROPANE	<0.001
2,2-DICHLOROPROPANE	<0.001
2-CHLOROTOLUENE	<0.001
4-CHLOROTOLUENE	<0.001
BENZENE	<0.0005
BROMOBENZENE	<0.001
BROMOCHLOROMETHANE	<0.001
BROMODICHLOROMETHANE	<0.001
BROMOFORM	<0.001
BROMOMETHANE	<0.001
CARBON TETRACHLORIDE	<0.0005
CHLOROBENZENE	<0.001
CHLOROETHANE	<0.001
CHLOROFORM	0.007
CHLOROMETHANE	<0.001
CIS-1,2-DICHLOROETHENE	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001
DIBROMOCHLOROMETHANE	<0.001
DIBROMOMETHANE	<0.001
DICHLORODIFLUOROMETHANE	0.0066
ETHYLBENZENE	<0.001
M-XYLENE	<0.001
O-XYLENE	<0.001
P-XYLENE	<0.001
METHYLENE CHLORIDE	0.0011
STYRENE	<0.001
TETRACHLOROETHENE	0.0081
TOLUENE	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001
TRICHLOROETHENE	0.0018
TRICHLOROFLUOROMETHANE	<0.001
VINYL CHLORIDE	<0.0005
-- SEMI-VOLATILE EXTRACTABLES --	
1,2,3-TRICHLOROBENZENE	<0.001
1,2,3-TRICHLOROPROPANE	<0.001
1,2,4-TRICHLOROBENZENE	<0.001
1,2,4-TRIMETHYLBENZENE	<0.001
1,2-DIBROMO-3-CHLOROPROPANE	<0.001
1,2-DICHLOROBENZENE	<0.001
1,3,5-TRIMETHYLBENZENE	<0.001
1,3-DICHLOROBENZENE	<0.001
1,3-DICHLOROPROPANE	<0.001
1,4-DICHLOROBENZENE	<0.0005
DICHLOROMONOFLUOROMETHANE	0.0045
HEXACHLOROBUTADIENE	<0.001
ISOPROPYLBENZENE	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	23
SAMPLE DATE	05/06/90
SAMPLE TIME	11:15
LAB	EL
LAB NUMBER	90-10826
SAMPLE NUMBER	HL-9005-109
-- SEMI-VOLATILE EXTRACTABLES --	
N-BUTYLBENZENE	<0.001
N-PROPYLBENZENE	<0.001
NAPHTHALENE	<0.001
P-ISOPROPYLTOLUENE	<0.001
SEC-BUTYLBENZENE	<0.001
TERT-BUTYLBENZENE	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	26
SAMPLE DATE	05/03/90
SAMPLE TIME	11:00
LAB	EL
LAB NUMBER	90-10817
SAMPLE NUMBER	HL-9005-100
-- VOLATILE ORGANICS --	
1,1,1,2-TETRACHLOROETHANE	<0.001
1,1,1-TRICHLOROETHANE	<0.0005
1,1,2,2-TETRACHLOROETHANE	<0.001
1,1,2-TRICHLOROETHANE	<0.001
1,1-DICHLOROETHANE	<0.001
1,1-DICHLOROETHENE	<0.0005
1,1-DICHLOROPROPENE	<0.001
1,2-DIBROMOETHANE	<0.001
1,2-DICHLOROETHANE	<0.0005
1,2-DICHLOROPROPANE	<0.001
2,2-DICHLOROPROPANE	<0.001
2-CHLOROTOLUENE	<0.001
4-CHLOROTOLUENE	<0.001
BENZENE	<0.0005
BROMOBENZENE	<0.001
BROMOCHLOROMETHANE	<0.001
BROMODICHLOROMETHANE	<0.001
BROMOFORM	<0.001
BROMOMETHANE	<0.001
CARBON TETRACHLORIDE	<0.0005
CHLOROBENZENE	<0.001
CHLOROETHANE	<0.001
CHLOROFORM	<0.001
CHLOROMETHANE	<0.001
CIS-1,2-DICHLOROETHENE	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001
DIBROMOCHLOROMETHANE	<0.001
DIBROMOMETHANE	<0.001
DICHLORODIFLUOROMETHANE	<0.001
ETHYLBENZENE	<0.001
M-XYLENE	<0.001
O-XYLENE	<0.001
P-XYLENE	<0.001
METHYLENE CHLORIDE	<0.001
STYRENE	<0.001
TETRACHLOROETHENE	<0.0005
TOLUENE	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001
TRICHLOROETHENE	<0.0005
TRICHLOROFLUOROMETHANE	<0.001
VINYL CHLORIDE	<0.0005
-- SEMI-VOLATILE EXTRACTABLES --	
1,2,3-TRICHLOROBENZENE	<0.001
1,2,3-TRICHLOROPROPANE	<0.001
1,2,4-TRICHLOROBENZENE	<0.001
1,2,4-TRIMETHYLBENZENE	<0.001
1,2-DIBROMO-3-CHLOROPROPANE	<0.001
1,2-DICHLOROBENZENE	<0.001
1,3,5-TRIMETHYLBENZENE	<0.001
1,3-DICHLOROBENZENE	<0.001
1,3-DICHLOROPROPANE	<0.001
1,4-DICHLOROBENZENE	<0.0005
DICHLOROMONOFLUOROMETHANE	<0.001
HEXACHLOROBUTADIENE	<0.001
ISOPROPYLBENZENE	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	26
SAMPLE DATE	05/03/90
SAMPLE TIME	11:00
LAB	EL
LAB NUMBER	90-10817
SAMPLE NUMBER	HL-9005-100
-- SEMI-VOLATILE EXTRACTABLES --	
N-BUTYLBENZENE	<0.001
N-PROPYLBENZENE	<0.001
NAPHTHALENE	<0.001
P-ISOPROPYLTOLUENE	<0.001
SEC-BUTYLBENZENE	<0.001
TERT-BUTYLBENZENE	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	28	28	28
SAMPLE DATE	06/05/90	05/25/93	04/18/94
SAMPLE TIME	10:30		
LAB	EL	EL	EL
LAB NUMBER	90-15038	93-21821	94-16468
SAMPLE NUMBER	HL-9006-100	HL-1	HL-7
-- VOLATILE ORGANICS --			
1,1,1,2-TETRACHLOROETHANE	<0.001		<0.001
1,1,1-TRICHLOROETHANE	<0.0005	<0.001	<0.001
1,1,2,2-TETRACHLOROETHANE	<0.001	<0.001	<0.001
1,1,2-TRICHLOROETHANE	<0.001	<0.001	<0.001
1,1-DICHLOROETHANE	<0.001	<0.001	<0.001
1,1-DICHLOROETHENE	<0.0005	<0.001	<0.001
1,1-DICHLOROPROPENE	<0.001		
1,2-DIBROMOETHANE	<0.001		<0.001
1,2-DICHLOROETHANE	<0.0005	<0.001	<0.001
1,2-DICHLOROPROPANE	<0.001		<0.001
2,2-DICHLOROPROPANE	<0.001		
2-CHLOROETHYL VINYL ETHER		<0.001	
2-CHLOROTOLUENE	<0.001		
2-HEXANONE			<0.02
4-BROMOFLUOROBENZENE		<0.01	
4-CHLOROTOLUENE	<0.001		
ACETONE			<0.05
ACRYLONITRILE			<0.02
BENZENE	<0.0005	<0.001	<0.001
BROMOBENZENE	<0.001		
BROMOCHLOROMETHANE	<0.001	<0.001	<0.001
BROMODICHLOROMETHANE	0.0019	<0.001	0.017
BROMOFORM	<0.001	<0.001	0.015
BROMOMETHANE	<0.001	<0.001	<0.001
CARBON DISULFIDE			<0.001
CARBON TETRACHLORIDE	<0.0005	<0.001	<0.001
CHLOROBENZENE	<0.001	<0.001	<0.001
CHLOROETHANE	<0.001	<0.001	<0.001
CHLOROFORM	0.014	0.0057	0.013
CHLOROMETHANE	<0.001	<0.001	<0.001
CIS-1,2-DICHLOROETHENE	<0.001		<0.001
CIS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001
DIBROMOCHLOROMETHANE	<0.001	<0.001	0.029
DIBROMOMETHANE	<0.001	<0.001	<0.001
DICHLORODIFLUOROMETHANE	<0.001	<0.001	<0.001
DICHLOROFLUOROMETHANE			<0.001
ETHYL METHACRYLATE		<0.001	
ETHYLBENZENE	<0.001	<0.001	<0.001
IODOMETHANE		<0.001	<0.001
TOTAL XYLENE		<0.001	
M-XYLENE	<0.001		
O-XYLENE	<0.001		<0.001
P-XYLENE	<0.001		
METHYL ETHYL KETONE			<0.02
METHYL ISOBUTL KETONE			<0.02
METHYLENE CHLORIDE	<0.001	<0.001	<0.001
STYRENE	<0.001	<0.001	<0.001
TETRACHLOROETHENE	0.0074	0.0087	0.0052
TOLUENE	<0.001	<0.001	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001	<0.001	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001
TRICHLOROETHENE	<0.0005	<0.001	<0.001
TRICHLOROFLUOROMETHANE	<0.001	<0.001	<0.001
VINYL ACETATE		<0.001	<0.001
VINYL CHLORIDE	<0.0005	<0.001	<0.001
-- SEMI-VOLATILE EXTRACTABLES --			
1,2,3-TRICHLOROBENZENE	<0.001		

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	28	28	28
SAMPLE DATE	06/05/90	05/25/93	04/18/94
SAMPLE TIME	10:30		
LAB	EL	EL	EL
LAB NUMBER	90-15038	93-21821	94-16468
SAMPLE NUMBER	HL-9006-100	HL-1	HL-7
-- SEMI-VOLATILE EXTRACTABLES --			
1,2,3-TRICHLOROPROPANE	<0.001	<0.001	<0.001
1,2,4-TRICHLOROBENZENE	<0.001		
1,2,4-TRIMETHYLBENZENE	<0.001		
1,2-DIBROMO-3-CHLOROPROPANE	<0.001		<0.001
1,2-DICHLOROBENZENE	<0.001		<0.001
1,3,5-TRIMETHYLBENZENE	<0.001		
1,3-DICHLOROBENZENE	<0.001		
1,3-DICHLOROPROPANE	<0.001		
TRANS-1,4-DICHLORO-2-BUTENE			<0.002
1,4-DICHLORO-2-BUTENE			<0.002
1,4-DICHLOROBENZENE	<0.0005		<0.001
1,4-DIFLUOROBENZENE		<0.001	
DICHLOROMONOFLUOROMETHANE	<0.001		
HEXACHLOROBUTADIENE	<0.001		
ISOPROPYLBENZENE	<0.001		
N-BUTYLBENZENE	<0.001		
N-PROPYLBENZENE	<0.001		
NAPHTHALENE	<0.001		
P-ISOPROPYLTOLUENE	<0.001		
SEC-BUTYLBENZENE	<0.001		
TERT-BUTYLBENZENE	<0.001		
-- HYDROCARBONS --			
M+P-XYLENE			<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	31	31	31	31	31	31	31
SAMPLE DATE	05/03/90	04/13/91	01/29/92	05/28/92	12/02/92	05/28/93	01/04/94
SAMPLE TIME	12:50	13:20	17:20		12:38		15:00
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	90-10820	91-13088	92-5002	92-19788	92-50588	93-21830	94-3395
SAMPLE NUMBER	HL-9005-103	HL-9104-111	HL-9201-110	HL-9205-112	HL-9212-907	HL-11	HL-104G6
-- VOLATILE ORGANICS --							
1,1,1,2-TETRACHLOROETHANE	<0.001						<0.001
1,1,1-TRICHLOROETHANE	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001
1,1,2,2-TETRACHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,2-TRICHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-DICHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-DICHLOROETHENE	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001
1,1-DICHLOROPROPENE	<0.001						
1,2-DIBROMOETHANE	<0.001						<0.001
1,2-DICHLOROETHANE	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001
1,2-DICHLOROPROPANE	<0.001						<0.001
2,2-DICHLOROPROPANE	<0.001						
2-BUTANONE (METHYL-ETHYL-KETONE)		<0.01					
2-CHLOROETHYL VINYL ETHER		<0.01	<0.01	<0.01	<0.001	<0.001	
2-CHLOROTOLUENE	<0.001						
2-HEXANONE		<0.01					<0.02
4-BROMOFLUOROBENZENE		<0.01	<0.01	<0.01	<0.01	<0.01	
4-CHLOROTOLUENE	<0.001						
4-METHYL-2-PENTANONE		<0.01					
ACETONE		<0.01					<0.02
ACROLEIN		<0.01					
ACRYLONITRILE		<0.01					<0.02
BENZENE	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001
BROMOBENZENE	<0.001						
BROMOCHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMODICHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMOFORM	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMOMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CARBON DISULFIDE		<0.01					<0.001
CARBON TETRACHLORIDE	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001
CHLOROBENZENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROFORM	0.01	0.0077	0.0088	0.009	0.0074	0.0086	0.0077
CHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CIS-1,2-DICHLOROETHENE	<0.001						<0.001
CIS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DIBROMOCHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DIBROMOMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DICHLORODIFLUOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
ETHANOL		<0.01					
ETHYL METHACRYLATE		<0.01	<0.01	<0.01	<0.001	<0.001	
ETHYLBENZENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
IODOMETHANE		<0.01	<0.01	<0.01	<0.001	<0.001	<0.001
TOTAL XYLENE		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
M-XYLENE	<0.001						
O-XYLENE	<0.001						<0.001
P-XYLENE	<0.001						
METHYL ETHYL KETONE							<0.02
METHYL ISOBUTL KETONE							<0.02
METHYLENE CHLORIDE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
STYRENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TETRACHLOROETHENE	0.0006	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001
TOLUENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRICHLOROETHENE	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001
TRICHLOROFLUOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
VINYL ACETATE		<0.01	<0.01	<0.01	<0.02	<0.001	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	31	31	31	31	31	31	31
SAMPLE DATE	05/03/90	04/13/91	01/29/92	05/28/92	12/02/92	05/28/93	01/04/94
SAMPLE TIME	12:50	13:20	17:20		12:38		15:00
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	90-10820	91-13088	92-5002	92-19788	92-50588	93-21830	94-3395
SAMPLE NUMBER	HL-9005-103	HL-9104-111	HL-9201-110	HL-9205-112	HL-9212-907	HL-11	HL-104G6
-- VOLATILE ORGANICS --							
VINYL CHLORIDE	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001
-- SEMI-VOLATILE EXTRACTABLES --							
1,2,3-TRICHLOROBENZENE	<0.001						
1,2,3-TRICHLOROPROPANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2,4-TRICHLOROBENZENE	<0.001						
1,2,4-TRIMETHYLBENZENE	<0.001						
1,2-DIBROMO-3-CHLOROPROPANE	<0.001						<0.001
1,2-DICHLOROBENZENE	<0.001						<0.001
1,3,5-TRIMETHYLBENZENE	<0.001						
1,3-DICHLOROBENZENE	<0.001						
1,3-DICHLOROPROPANE	<0.001						
1,4-DICHLORO-2-BUTENE		<0.01					<0.002
1,4-DICHLOROBENZENE	<0.0005						<0.001
1,4-DIFLUOROBENZENE		<0.01	<0.01	<0.01	<0.001	<0.001	
DICHLOROMONOFLUOROMETHANE	<0.001						
HEXACHLOROBUTADIENE	<0.001						
ISOPROPYLBENZENE	<0.001						
N-BUTYLBENZENE	<0.001						
N-PROPYLBENZENE	<0.001						
NAPHTHALENE	<0.001						
P-ISOPROPYLTOLUENE	<0.001						
SEC-BUTYLBENZENE	<0.001						
TERT-BUTYLBENZENE	<0.001						

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	31	31
SAMPLE DATE	04/18/94	12/08/94
SAMPLE TIME		16:30
LAB	EL	EL
LAB NUMBER	94-16467	94-60431
SAMPLE NUMBER	HL-6	HL-9412-101
-- VOLATILE ORGANICS --		
1,1,1,2-TETRACHLOROETHANE	<0.001	<0.001
1,1,1-TRICHLOROETHANE	<0.001	<0.001
1,1,2,2-TETRACHLOROETHANE	<0.001	<0.001
1,1,2-TRICHLOROETHANE	<0.001	<0.001
1,1-DICHLOROETHANE	<0.001	<0.001
1,1-DICHLOROETHENE	<0.001	<0.001
1,2-DIBROMOETHANE	<0.001	<0.001
1,2-DICHLOROETHANE	<0.001	<0.001
1,2-DICHLOROPROPANE	<0.001	<0.001
2-HEXANONE	<0.02	<0.02
ACETONE	<0.05	<0.05
ACRYLONITRILE	<0.02	<0.02
BENZENE	<0.001	<0.001
BROMOCHLOROMETHANE	<0.001	<0.001
BROMODICHLOROMETHANE	<0.001	<0.001
BROMOFORM	<0.001	<0.001
BROMOMETHANE	<0.001	<0.001
CARBON DISULFIDE	<0.001	<0.001
CARBON TETRACHLORIDE	<0.001	<0.001
CHLOROBENZENE	<0.001	<0.001
CHLOROETHANE	<0.001	<0.001
CHLOROFORM	0.0065	0.008
CHLOROMETHANE	<0.001	<0.001
CIS-1,2-DICHLOROETHENE	<0.001	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001	<0.001
DIBROMOCHLOROMETHANE	<0.001	<0.001
DIBROMOMETHANE	<0.001	<0.001
DICHLORODIFLUOROMETHANE	<0.001	<0.001
DICHLOROFLUOROMETHANE	<0.001	
ETHYLBENZENE	<0.001	<0.001
IODOMETHANE	<0.001	<0.001
O-XYLENE	<0.001	<0.001
METHYL ETHYL KETONE	<0.02	<0.02
METHYL ISOBUTL KETONE	<0.02	<0.02
METHYLENE CHLORIDE	<0.001	<0.001
STYRENE	<0.001	<0.001
TETRACHLOROETHENE	<0.001	<0.001
TOLUENE	<0.001	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001	<0.001
TRICHLOROETHENE	<0.001	<0.001
TRICHLOROFLUOROMETHANE	<0.001	<0.001
VINYL ACETATE	<0.001	<0.001
VINYL CHLORIDE	<0.001	<0.001
-- SEMI-VOLATILE EXTRACTABLES --		
1,2,3-TRICHLOROPROPANE	<0.001	<0.001
1,2-DIBROMO-3-CHLOROPROPANE	<0.001	<0.005
1,2-DICHLOROBENZENE	<0.001	<0.001
TRANS-1,4-DICHLORO-2-BUTENE	<0.002	<0.002
1,4-DICHLORO-2-BUTENE	<0.002	
1,4-DICHLOROBENZENE	<0.001	<0.001
-- HYDROCARBONS --		
M+P-XYLENE	<0.001	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	32
SAMPLE DATE	05/03/90
SAMPLE TIME	11:40
LAB	EL
LAB NUMBER	90-10818
SAMPLE NUMBER	HL-9005-101
-- VOLATILE ORGANICS --	
1,1,1,2-TETRACHLOROETHANE	<0.001
1,1,1-TRICHLOROETHANE	<0.0005
1,1,2,2-TETRACHLOROETHANE	<0.001
1,1,2-TRICHLOROETHANE	<0.001
1,1-DICHLOROETHANE	<0.001
1,1-DICHLOROETHENE	<0.0005
1,1-DICHLOROPROPENE	<0.001
1,2-DIBROMOETHANE	<0.001
1,2-DICHLOROETHANE	<0.0005
1,2-DICHLOROPROPANE	<0.001
2,2-DICHLOROPROPANE	<0.001
2-CHLOROTOLUENE	<0.001
4-CHLOROTOLUENE	<0.001
BENZENE	<0.0005
BROMOBENZENE	<0.001
BROMOCHLOROMETHANE	<0.001
BROMODICHLOROMETHANE	<0.001
BROMOFORM	<0.001
BROMOMETHANE	<0.001
CARBON TETRACHLORIDE	<0.0005
CHLOROBENZENE	<0.001
CHLOROETHANE	<0.001
CHLOROFORM	<0.001
CHLOROMETHANE	<0.001
CIS-1,2-DICHLOROETHENE	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001
DIBROMOCHLOROMETHANE	<0.001
DIBROMOMETHANE	<0.001
DICHLORODIFLUOROMETHANE	<0.001
ETHYLBENZENE	<0.001
M-XYLENE	<0.001
O-XYLENE	<0.001
P-XYLENE	<0.001
METHYLENE CHLORIDE	<0.001
STYRENE	<0.001
TETRACHLOROETHENE	<0.0005
TOLUENE	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001
TRICHLOROETHENE	<0.0005
TRICHLOROFLUOROMETHANE	<0.001
VINYL CHLORIDE	<0.0005
-- SEMI-VOLATILE EXTRACTABLES --	
1,2,3-TRICHLOROBENZENE	<0.001
1,2,3-TRICHLOROPROPANE	<0.001
1,2,4-TRICHLOROBENZENE	<0.001
1,2,4-TRIMETHYLBENZENE	<0.001
1,2-DIBROMO-3-CHLOROPROPANE	<0.001
1,2-DICHLOROBENZENE	<0.001
1,3,5-TRIMETHYLBENZENE	<0.001
1,3-DICHLOROBENZENE	<0.001
1,3-DICHLOROPROPANE	<0.001
1,4-DICHLOROBENZENE	<0.0005
DICHLOROMONOFLUOROMETHANE	<0.001
HEXACHLOROBUTADIENE	<0.001
ISOPROPYLBENZENE	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	32
SAMPLE DATE	05/03/90
SAMPLE TIME	11:40
LAB	EL
LAB NUMBER	90-10818
SAMPLE NUMBER	HL-9005-101
-- SEMI-VOLATILE EXTRACTABLES --	
N-BUTYLBENZENE	<0.001
N-PROPYLBENZENE	<0.001
NAPHTHALENE	<0.001
P-ISOPROPYLTOLUENE	<0.001
SEC-BUTYLBENZENE	<0.001
TERT-BUTYLBENZENE	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	34
SAMPLE DATE	05/06/90
SAMPLE TIME	11:00
LAB	EL
LAB NUMBER	90-10824
SAMPLE NUMBER	HL-9005-107
-- VOLATILE ORGANICS --	
1,1,1,2-TETRACHLOROETHANE	<0.001
1,1,1-TRICHLOROETHANE	<0.0005
1,1,2,2-TETRACHLOROETHANE	<0.001
1,1,2-TRICHLOROETHANE	<0.001
1,1-DICHLOROETHANE	<0.001
1,1-DICHLOROETHENE	<0.0005
1,1-DICHLOROPROPENE	<0.001
1,2-DIBROMOETHANE	<0.001
1,2-DICHLOROETHANE	<0.0005
1,2-DICHLOROPROPANE	<0.001
2,2-DICHLOROPROPANE	<0.001
2-CHLOROTOLUENE	<0.001
4-CHLOROTOLUENE	<0.001
BENZENE	<0.0005
BROMOBENZENE	<0.001
BROMOCHLOROMETHANE	<0.001
BROMODICHLOROMETHANE	<0.001
BROMOFORM	<0.001
BROMOMETHANE	<0.001
CARBON TETRACHLORIDE	<0.0005
CHLOROBENZENE	<0.001
CHLOROETHANE	<0.001
CHLOROFORM	0.0056
CHLOROMETHANE	<0.001
CIS-1,2-DICHLOROETHENE	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001
DIBROMOCHLOROMETHANE	<0.001
DIBROMOMETHANE	<0.001
DICHLORODIFLUOROMETHANE	<0.001
ETHYLBENZENE	<0.001
M-XYLENE	<0.001
O-XYLENE	<0.001
P-XYLENE	<0.001
METHYLENE CHLORIDE	<0.001
STYRENE	<0.001
TETRACHLOROETHENE	0.0022
TOLUENE	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001
TRICHLOROETHENE	<0.0005
TRICHLOROFLUOROMETHANE	<0.001
VINYL CHLORIDE	<0.0005
-- SEMI-VOLATILE EXTRACTABLES --	
1,2,3-TRICHLOROBENZENE	<0.001
1,2,3-TRICHLOROPROPANE	<0.001
1,2,4-TRICHLOROBENZENE	<0.001
1,2,4-TRIMETHYLBENZENE	<0.001
1,2-DIBROMO-3-CHLOROPROPANE	<0.001
1,2-DICHLOROBENZENE	<0.001
1,3,5-TRIMETHYLBENZENE	<0.001
1,3-DICHLOROBENZENE	<0.001
1,3-DICHLOROPROPANE	<0.001
1,4-DICHLOROBENZENE	<0.0005
DICHLOROMONOFLUOROMETHANE	<0.001
HEXACHLOROBUTADIENE	<0.001
ISOPROPYLBENZENE	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	34
SAMPLE DATE	05/06/90
SAMPLE TIME	11:00
LAB	EL
LAB NUMBER	90-10824
SAMPLE NUMBER	HL-9005-107
-- SEMI-VOLATILE EXTRACTABLES --	
N-BUTYLBENZENE	<0.001
N-PROPYLBENZENE	<0.001
NAPHTHALENE	<0.001
P-ISOPROPYLTOLUENE	<0.001
SEC-BUTYLBENZENE	<0.001
TERT-BUTYLBENZENE	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	36
SAMPLE DATE	06/05/90
SAMPLE TIME	11:00
LAB	EL
LAB NUMBER	90-15040
SAMPLE NUMBER	HL-9006-102

-- VOLATILE ORGANICS --	
1,1,1,2-TETRACHLOROETHANE	<0.001
1,1,1-TRICHLOROETHANE	<0.0005
1,1,2,2-TETRACHLOROETHANE	<0.001
1,1,2-TRICHLOROETHANE	<0.001
1,1-DICHLOROETHANE	<0.001
1,1-DICHLOROETHENE	<0.0005
1,1-DICHLOROPROPENE	<0.001
1,2-DIBROMOETHANE	<0.001
1,2-DICHLOROETHANE	<0.0005
1,2-DICHLOROPROPANE	<0.001
2,2-DICHLOROPROPANE	<0.001
2-CHLOROTOLUENE	<0.001
4-CHLOROTOLUENE	<0.001
BENZENE	<0.0005
BROMOBENZENE	<0.001
BROMOCHLOROMETHANE	<0.001
BROMODICHLOROMETHANE	<0.001
BROMOFORM	<0.001
BROMOMETHANE	<0.001
CARBON TETRACHLORIDE	<0.0005
CHLOROBENZENE	<0.001
CHLOROETHANE	<0.001
CHLOROFORM	<0.001
CHLOROMETHANE	<0.001
CIS-1,2-DICHLOROETHENE	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001
DIBROMOCHLOROMETHANE	<0.001
DIBROMOMETHANE	<0.001
DICHLORODIFLUOROMETHANE	<0.001
ETHYLBENZENE	<0.001
M-XYLENE	<0.001
O-XYLENE	<0.001
P-XYLENE	<0.001
METHYLENE CHLORIDE	<0.001
STYRENE	<0.001
TETRACHLOROETHENE	<0.0005
TOLUENE	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001
TRICHLOROETHENE	<0.0005
TRICHLOROFLUOROMETHANE	<0.001
VINYL CHLORIDE	<0.0005
-- SEMI-VOLATILE EXTRACTABLES --	
1,2,3-TRICHLOROBENZENE	<0.001
1,2,3-TRICHLOROPROPANE	<0.001
1,2,4-TRICHLOROBENZENE	<0.001
1,2,4-TRIMETHYLBENZENE	<0.001
1,2-DIBROMO-3-CHLOROPROPANE	<0.001
1,2-DICHLOROBENZENE	<0.001
1,3,5-TRIMETHYLBENZENE	<0.001
1,3-DICHLOROBENZENE	<0.001
1,3-DICHLOROPROPANE	<0.001
1,4-DICHLOROBENZENE	<0.0005
DICHLOROMONOFLUOROMETHANE	<0.001
HEXACHLOROBUTADIENE	<0.001
ISOPROPYLBENZENE	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	36
SAMPLE DATE	06/05/90
SAMPLE TIME	11:00
LAB	EL
LAB NUMBER	90-15040
SAMPLE NUMBER	HL-9006-102
-- SEMI-VOLATILE EXTRACTABLES --	
N-BUTYLBENZENE	<0.001
N-PROPYLBENZENE	<0.001
NAPHTHALENE	<0.001
P-ISOPROPYLTOLUENE	<0.001
SEC-BUTYLBENZENE	<0.001
TERT-BUTYLBENZENE	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	38	38	38
SAMPLE DATE	05/03/90	05/03/90	01/22/92
SAMPLE TIME	13:10	13:40	14:15
LAB	EL	EL	EL
LAB NUMBER	90-10821	90-10833	92-4691
REMARKS		DUPLICATE	
SAMPLE NUMBER	HL-9005-104	HL-9005-204	HL-9201-108
-- VOLATILE ORGANICS --			
1,1,1,2-TETRACHLOROETHANE	<0.001	<0.001	
1,1,1-TRICHLOROETHANE	<0.0005	<0.0005	<0.0005
1,1,2,2-TETRACHLOROETHANE	<0.001	<0.001	<0.001
1,1,2-TRICHLOROETHANE	<0.001	<0.001	<0.001
1,1-DICHLOROETHANE	<0.001	<0.001	<0.001
1,1-DICHLOROETHENE	<0.0005	<0.0005	<0.0005
1,1-DICHLOROPROPENE	<0.001	<0.001	
1,2-DIBROMOETHANE	<0.001	<0.001	
1,2-DICHLOROETHANE	<0.0005	<0.0005	<0.0005
1,2-DICHLOROPROPANE	<0.001	<0.001	
2,2-DICHLOROPROPANE	<0.001	<0.001	
2-CHLOROETHYL VINYL ETHER			<0.01
2-CHLOROTOLUENE	<0.001	<0.001	
4-BROMOFLUOROBENZENE			<0.01
4-CHLOROTOLUENE	<0.001	<0.001	
BENZENE	<0.0005	<0.0005	<0.0005
BROMOBENZENE	<0.001	<0.001	
BROMOCHLOROMETHANE	<0.001	<0.001	<0.001
BROMODICHLOROMETHANE	<0.001	<0.001	<0.001
BROMOFORM	<0.001	<0.001	<0.001
BROMOMETHANE	<0.001	<0.001	<0.001
CARBON TETRACHLORIDE	<0.0005	<0.0005	<0.0005
CHLOROBENZENE	<0.001	<0.001	<0.001
CHLOROETHANE	<0.001	<0.001	<0.001
CHLOROFORM	0.009	0.0079	0.0074
CHLOROMETHANE	<0.001	<0.001	<0.001
CIS-1,2-DICHLOROETHENE	<0.001	<0.001	
CIS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001
DIBROMOCHLOROMETHANE	<0.001	<0.001	<0.001
DIBROMOMETHANE	<0.001	<0.001	<0.001
DICHLORODIFLUOROMETHANE	<0.001	0.001	<0.001
ETHYL METHACRYLATE			<0.01
ETHYLBENZENE	<0.001	<0.001	<0.001
IODOMETHANE			<0.01
TOTAL XYLENE			<0.001
M-XYLENE	<0.001	<0.001	
O-XYLENE	<0.001	<0.001	
P-XYLENE	<0.001	<0.001	
METHYLENE CHLORIDE	<0.001	<0.001	<0.001
STYRENE	<0.001	<0.001	<0.001
TETRACHLOROETHENE	0.0011	0.00097	0.00074
TOLUENE	<0.001	<0.001	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001	<0.001	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001
TRICHLOROETHENE	<0.0005	<0.0005	<0.0005
TRICHLOROFLUOROMETHANE	<0.001	<0.001	<0.001
VINYL ACETATE			<0.01
VINYL CHLORIDE	<0.0005	<0.0005	<0.0005
-- SEMI-VOLATILE EXTRACTABLES --			
1,2,3-TRICHLOROBENZENE	<0.001	<0.001	
1,2,3-TRICHLOROPROPANE	<0.001	<0.001	<0.001
1,2,4-TRICHLOROBENZENE	<0.001	<0.001	
1,2,4-TRIMETHYLBENZENE	<0.001	<0.001	
1,2-DIBROMO-3-CHLOROPROPANE	<0.001	<0.001	
1,2-DICHLOROBENZENE	<0.001	<0.001	

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	38	38	38
SAMPLE DATE	05/03/90	05/03/90	01/22/92
SAMPLE TIME	13:10	13:40	14:15
LAB	EL	EL	EL
LAB NUMBER	90-10821	90-10833	92-4691
REMARKS		DUPLICATE	
SAMPLE NUMBER	HL-9005-104	HL-9005-204	HL-9201-108
-- SEMI-VOLATILE EXTRACTABLES --			
1,3,5-TRIMETHYLBENZENE	<0.001	<0.001	
1,3-DICHLOROBENZENE	<0.001	<0.001	
1,3-DICHLOROPROPANE	<0.001	<0.001	
1,4-DICHLOROBENZENE	<0.0005	<0.0005	
1,4-DIFLUOROBENZENE			<0.01
DICHLOROMONOFLUOROMETHANE	<0.001	<0.001	
HEXACHLOROBUTADIENE	<0.001	<0.001	
ISOPROPYLBENZENE	<0.001	<0.001	
N-BUTYLBENZENE	<0.001	<0.001	
N-PROPYLBENZENE	<0.001	<0.001	
NAPHTHALENE	<0.001	<0.001	
P-ISOPROPYLTOLUENE	<0.001	<0.001	
SEC-BUTYLBENZENE	<0.001	<0.001	
TERT-BUTYLBENZENE	<0.001	<0.001	

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	40	40	40	40	40	40	40
SAMPLE DATE	05/06/90	04/13/91	05/28/92	12/02/92	05/28/93	01/04/94	04/18/94
SAMPLE TIME	12:15	13:40		10:35		13:45	
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	90-10831	91-13086	92-19787	92-50586	93-21829	94-3391	94-16471
SAMPLE NUMBER	HL-9005-114	HL-9104-109	HL-9205-118	HL-9212-905	HL-10	HL-104H2	HL-10
-- VOLATILE ORGANICS --							
1,1,1,2-TETRACHLOROETHANE	<0.001					<0.001	<0.001
1,1,1-TRICHLOROETHANE	0.0013	0.001	0.001	<0.001	<0.001	<0.001	<0.001
1,1,2,2-TETRACHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,2-TRICHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-DICHLOROETHANE	0.0015	0.0012	0.0013	0.0011	<0.001	<0.001	<0.001
1,1-DICHLOROETHENE	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001
1,1-DICHLOROPROPENE	<0.001						
1,2-DIBROMOETHANE	<0.001					<0.001	<0.001
1,2-DICHLOROETHANE	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001
1,2-DICHLOROPROPANE	<0.001					<0.001	<0.001
2,2-DICHLOROPROPANE	<0.001						
2-BUTANONE (METHYL-ETHYL-KETONE)		<0.01					
2-CHLOROETHYL VINYL ETHER		<0.01	<0.01	<0.001	<0.001		
2-CHLOROTOLUENE	<0.001						
2-HEXANONE		<0.01				<0.02	<0.02
4-BROMOFLUOROBENZENE		<0.01	<0.01	<0.01	<0.01		
4-CHLOROTOLUENE	<0.001						
4-METHYL-2-PENTANONE		<0.01					
ACETONE		<0.01				<0.02	<0.05
ACROLEIN		<0.01					
ACRYLONITRILE		<0.01				<0.02	<0.02
BENZENE	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001
BROMOBENZENE	<0.001						
BROMOCHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMODICHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMOFORM	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMOMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CARBON DISULFIDE		<0.01				<0.001	<0.001
CARBON TETRACHLORIDE	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001
CHLOROBENZENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROFORM	0.011	0.011	0.0091	0.0075	0.0056	0.0057	0.0057
CHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CIS-1,2-DICHLOROETHENE	0.002					0.0014	0.0013
CIS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DIBROMOCHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DIBROMOMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DICHLORODIFLUOROMETHANE	0.0045	0.0021	0.0014	0.0024	0.0015	0.0014	0.002
DICHLOROFLUOROMETHANE							0.024
ETHANOL		<0.01					
ETHYL METHACRYLATE		<0.01	<0.01	<0.001	<0.001		
ETHYLBENZENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
IODOMETHANE		<0.01	<0.01	<0.001	<0.001	<0.001	<0.001
TOTAL XYLENE		<0.001	<0.001	<0.001	<0.001	<0.001	
M-XYLENE	<0.001						
O-XYLENE	<0.001					<0.001	<0.001
P-XYLENE	<0.001						
METHYL ETHYL KETONE						<0.02	<0.02
METHYL ISOBUTL KETONE						<0.02	<0.02
METHYLENE CHLORIDE	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
STYRENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TETRACHLOROETHENE	0.008	0.0056	0.0046	.0071	0.0036	0.0051	0.0038
TOLUENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRICHLOROETHENE	0.0013	0.00088	0.001	<0.001	<0.001	<0.001	<0.001
TRICHLOROFLUOROMETHANE	<0.001	<0.001	0.0011	<0.001	<0.001	<0.001	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	40	40	40	40	40	40	40
SAMPLE DATE	05/06/90	04/13/91	05/28/92	12/02/92	05/28/93	01/04/94	04/18/94
SAMPLE TIME	12:15	13:40		10:35		13:45	
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	90-10831	91-13086	92-19787	92-50586	93-21829	94-3391	94-16471
SAMPLE NUMBER	HL-9005-114	HL-9104-109	HL-9205-118	HL-9212-905	HL-10	HL-104H2	HL-10
-- VOLATILE ORGANICS --							
VINYL ACETATE		<0.01	<0.01	<0.02	<0.001	<0.001	<0.001
VINYL CHLORIDE	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001
-- SEMI-VOLATILE EXTRACTABLES --							
1,2,3-TRICHLOROBENZENE	<0.001						
1,2,3-TRICHLOROPROPANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2,4-TRICHLOROBENZENE	<0.001						
1,2,4-TRIMETHYLBENZENE	<0.001						
1,2-DIBROMO-3-CHLOROPROPANE	<0.001					<0.001	<0.001
1,2-DICHLOROBENZENE	<0.001					<0.001	<0.001
1,3,5-TRIMETHYLBENZENE	<0.001						
1,3-DICHLOROBENZENE	<0.001						
1,3-DICHLOROPROPANE	<0.001						
TRANS-1,4-DICHLORO-2-BUTENE							<0.002
1,4-DICHLORO-2-BUTENE		<0.01				<0.002	<0.002
1,4-DICHLOROBENZENE	<0.0005					<0.001	<0.001
1,4-DIFLUOROBENZENE		<0.01	<0.01	<0.001	<0.001		
DICHLOROMONOFLUOROMETHANE	0.0041						
HEXACHLOROBUTADIENE	<0.001						
ISOPROPYLBENZENE	<0.001						
N-BUTYLBENZENE	<0.001						
N-PROPYLBENZENE	<0.001						
NAPHTHALENE	<0.001						
P-ISOPROPYLTOLUENE	<0.001						
SEC-BUTYLBENZENE	<0.001						
TERT-BUTYLBENZENE	<0.001						
-- HYDROCARBONS --							
M+P-XYLENE							<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	40	40
SAMPLE DATE	08/25/94	12/08/94
SAMPLE TIME	08:15	
LAB	EL	HYDRO
LAB NUMBER	94-40378	
REMARKS		NO SAMPLE
SAMPLE NUMBER	HL-9408-112	HL-9412-102
-- PHYSICAL PARAMETERS --		
DEPTH TO WATER LEVEL (FEET)	PUMPING	
PH (FLD)	7.13	
SC (UMHOS/CM AT 25 C) (FLD)	1283.0	
WATER TEMPERATURE (C) (FLD)	11.3	
-- VOLATILE ORGANICS --		
1,1,1,2-TETRACHLOROETHANE	<0.001	
1,1,1-TRICHLOROETHANE	<0.001	
1,1,2,2-TETRACHLOROETHANE	<0.001	
1,1,2-TRICHLOROETHANE	<0.001	
1,1-DICHLOROETHANE	<0.001	
1,1-DICHLOROETHENE	<0.001	
1,2-DIBROMOETHANE	<0.001	
1,2-DICHLOROETHANE	<0.001	
1,2-DICHLOROPROPANE	<0.001	
2-HEXANONE	<0.02	
ACETONE	<0.05	
ACRYLONITRILE	<0.02	
BENZENE	<0.001	
BROMOCHLOROMETHANE	<0.001	
BROMODICHLOROMETHANE	<0.001	
BROMOFORM	<0.001	
BROMOMETHANE	<0.001	
CARBON DISULFIDE	<0.001	
CARBON TETRACHLORIDE	<0.001	
CHLOROBENZENE	<0.001	
CHLOROETHANE	<0.001	
CHLOROFORM	0.0051	
CHLOROMETHANE	<0.001	
CIS-1,2-DICHLOROETHENE	0.0014	
CIS-1,3-DICHLOROPROPENE	<0.001	
DIBROMOCHLOROMETHANE	<0.001	
DIBROMOMETHANE	<0.001	
DICHLORODIFLUOROMETHANE	<0.001	
ETHYLBENZENE	<0.001	
IODOMETHANE	<0.001	
O-XYLENE	<0.001	
METHYL ETHYL KETONE	<0.02	
METHYL ISOBUTL KETONE	<0.02	
METHYLENE CHLORIDE	<0.001	
STYRENE	<0.001	
TETRACHLOROETHENE	0.0036	
TOLUENE	<0.001	
TRANS-1,2-DICHLOROETHENE	<0.001	
TRANS-1,3-DICHLOROPROPENE	<0.001	
TRICHLOROETHENE	<0.001	
TRICHLOROFLUOROMETHANE	<0.001	
VINYL ACETATE	<0.001	
VINYL CHLORIDE	<0.001	
-- SEMI-VOLATILE EXTRACTABLES --		
1,2,3-TRICHLOROPROPANE	<0.001	
1,2-DIBROMO-3-CHLOROPROPANE	<0.001	
1,2-DICHLOROBENZENE	<0.001	
TRANS-1,4-DICHLORO-2-BUTENE	<0.002	
1,4-DICHLOROBENZENE	<0.001	

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	40	40
SAMPLE DATE	08/25/94	12/08/94
SAMPLE TIME	08:15	
LAB	EL	HYDRO
LAB NUMBER	94-40378	
REMARKS		NO SAMPLE
SAMPLE NUMBER	HL-9408-112	HL-9412-102
-- HYDROCARBONS --		
M+P-XYLENE	<0.001	

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	42
SAMPLE DATE	05/03/90
SAMPLE TIME	12:20
LAB	EL
LAB NUMBER	90-10819
SAMPLE NUMBER	HL-9005-102
-- VOLATILE ORGANICS --	
1,1,1,2-TETRACHLOROETHANE	<0.001
1,1,1-TRICHLOROETHANE	0.00089
1,1,2,2-TETRACHLOROETHANE	<0.001
1,1,2-TRICHLOROETHANE	<0.001
1,1-DICHLOROETHANE	<0.001
1,1-DICHLOROETHENE	<0.0005
1,1-DICHLOROPROPENE	<0.001
1,2-DIBROMOETHANE	<0.001
1,2-DICHLOROETHANE	<0.0005
1,2-DICHLOROPROPANE	<0.001
2,2-DICHLOROPROPANE	<0.001
2-CHLOROTOLUENE	<0.001
4-CHLOROTOLUENE	<0.001
BENZENE	<0.0005
BROMOBENZENE	<0.001
BROMOCHLOROMETHANE	<0.001
BROMODICHLOROMETHANE	<0.001
BROMOFORM	<0.001
BROMOMETHANE	<0.001
CARBON TETRACHLORIDE	<0.0005
CHLOROBENZENE	<0.001
CHLOROETHANE	<0.001
CHLOROFORM	0.0028
CHLOROMETHANE	<0.001
CIS-1,2-DICHLOROETHENE	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001
DIBROMOCHLOROMETHANE	<0.001
DIBROMOMETHANE	<0.001
DICHLORODIFLUOROMETHANE	0.0046
ETHYLBENZENE	<0.001
M-XYLENE	<0.001
O-XYLENE	<0.001
P-XYLENE	<0.001
METHYLENE CHLORIDE	<0.001
STYRENE	<0.001
TETRACHLOROETHENE	0.005
TOLUENE	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001
TRICHLOROETHENE	0.0005
TRICHLOROFLUOROMETHANE	<0.001
VINYL CHLORIDE	<0.0005
-- SEMI-VOLATILE EXTRACTABLES --	
1,2,3-TRICHLOROBENZENE	<0.001
1,2,3-TRICHLOROPROPANE	<0.001
1,2,4-TRICHLOROBENZENE	<0.001
1,2,4-TRIMETHYLBENZENE	<0.001
1,2-DIBROMO-3-CHLOROPROPANE	<0.001
1,2-DICHLOROBENZENE	<0.001
1,3,5-TRIMETHYLBENZENE	<0.001
1,3-DICHLOROBENZENE	<0.001
1,3-DICHLOROPROPANE	<0.001
1,4-DICHLOROBENZENE	<0.0005
DICHLOROMONOFLUOROMETHANE	0.0024
HEXACHLOROBUTADIENE	<0.001
ISOPROPYLBENZENE	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	42
SAMPLE DATE	05/03/90
SAMPLE TIME	12:20
LAB	EL
LAB NUMBER	90-10819
SAMPLE NUMBER	HL-9005-102
-- SEMI-VOLATILE EXTRACTABLES --	
N-BUTYLBENZENE	<0.001
N-PROPYLBENZENE	<0.001
NAPHTHALENE	<0.001
P-ISOPROPYLTOLUENE	<0.001
SEC-BUTYLBENZENE	<0.001
TERT-BUTYLBENZENE	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	45	45
SAMPLE DATE	04/18/94	08/25/94
SAMPLE TIME		10:45
LAB	EL	EL
LAB NUMBER	94-16464	94-40762
SAMPLE NUMBER	HL-3	HL-9408-111
-- PHYSICAL PARAMETERS --		
DEPTH TO WATER LEVEL (FEET)		PUMPING
PH (FLD)		7.28
SC (UMHOS/CM AT 25 C) (FLD)		1028.0
WATER TEMPERATURE (C) (FLD)		12.1
-- VOLATILE ORGANICS --		
1,1,1,2-TETRACHLOROETHANE	<0.001	<0.001
1,1,1-TRICHLOROETHANE	<0.001	<0.001
1,1,2,2-TETRACHLOROETHANE	<0.001	<0.001
1,1,2-TRICHLOROETHANE	<0.001	<0.001
1,1-DICHLOROETHANE	<0.001	<0.001
1,1-DICHLOROETHENE	<0.001	<0.001
1,2-DIBROMOETHANE	<0.001	<0.001
1,2-DICHLOROETHANE	<0.001	<0.001
1,2-DICHLOROPROPANE	<0.001	<0.001
2-HEXANONE	<0.02	<0.02
ACETONE	<0.05	<0.05
ACRYLONITRILE	<0.02	<0.02
BENZENE	<0.001	<0.001
BROMOCHLOROMETHANE	<0.001	<0.001
BROMODICHLOROMETHANE	0.0015	<0.001
BROMOFORM	<0.001	<0.001
BROMOMETHANE	<0.001	<0.001
CARBON DISULFIDE	<0.001	0.0012
CARBON TETRACHLORIDE	<0.001	<0.001
CHLOROBENZENE	<0.001	<0.001
CHLOROETHANE	<0.001	<0.001
CHLOROFORM	0.02	0.0049
CHLOROMETHANE	<0.001	<0.001
CIS-1,2-DICHLOROETHENE	<0.001	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001	<0.001
DIBROMOCHLOROMETHANE	<0.001	<0.001
DIBROMOMETHANE	<0.001	<0.001
DICHLORODIFLUOROMETHANE	<0.001	<0.001
DICHLOROFLUOROMETHANE	<0.001	
ETHYLBENZENE	<0.001	<0.001
IODOMETHANE	<0.001	<0.001
O-XYLENE	<0.001	<0.001
METHYL ETHYL KETONE		<0.02
METHYL ETHYL KETONE	<0.02	
METHYL ISOBUTL KETONE	<0.02	<0.02
METHYLENE CHLORIDE	<0.001	<0.001
STYRENE	<0.001	<0.001
TETRACHLOROETHENE	<0.001	0.0016
TOLUENE	<0.001	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001	<0.001
TRICHLOROETHENE	<0.001	<0.001
TRICHLOROFLUOROMETHANE	<0.001	<0.001
VINYL ACETATE	<0.001	<0.001
VINYL CHLORIDE	<0.001	<0.001
-- SEMI-VOLATILE EXTRACTABLES --		
1,2,3-TRICHLOROPROPANE	<0.001	<0.001
1,2-DIBROMO-3-CHLOROPROPANE	<0.001	<0.001
1,2-DICHLOROBENZENE	<0.001	<0.001
TRANS-1,4-DICHLORO-2-BUTENE	<0.002	<0.002

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	45	45
SAMPLE DATE	04/18/94	08/25/94
SAMPLE TIME		10:45
LAB	EL	EL
LAB NUMBER	94-16464	94-40762
SAMPLE NUMBER	HL-3	HL-9408-111
-- SEMI-VOLATILE EXTRACTABLES --		
1,4-DICHLORO-2-BUTENE	<0.002	
1,4-DICHLOROBENZENE	<0.001	<0.001
-- HYDROCARBONS --		
M+P-XYLENE	<0.001	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	47
SAMPLE DATE	01/22/92
SAMPLE TIME	13:05
LAB	EL
LAB NUMBER	92-4689
SAMPLE NUMBER	HL-9201-106
-- VOLATILE ORGANICS --	
1,1,1-TRICHLOROETHANE	0.00061
1,1,2,2-TETRACHLOROETHANE	<0.001
1,1,2-TRICHLOROETHANE	<0.001
1,1-DICHLOROETHANE	<0.001
1,1-DICHLOROETHENE	<0.0005
1,2-DICHLOROETHANE	<0.0005
2-CHLOROETHYL VINYL ETHER	<0.01
4-BROMOFLUOROBENZENE	<0.01
BENZENE	<0.0005
BROMOCHLOROMETHANE	<0.001
BROMODICHLOROMETHANE	<0.001
BROMOFORM	<0.001
BROMOMETHANE	<0.001
CARBON TETRACHLORIDE	<0.0005
CHLOROBENZENE	<0.001
CHLOROETHANE	<0.001
CHLOROFORM	0.0032
CHLOROMETHANE	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001
DIBROMOCHLOROMETHANE	<0.001
DIBROMOMETHANE	<0.001
DICHLORODIFLUOROMETHANE	0.001
ETHYL METHACRYLATE	<0.01
ETHYLBENZENE	<0.001
IODOMETHANE	<0.01
TOTAL XYLENE	<0.001
METHYLENE CHLORIDE	<0.001
STYRENE	<0.001
TETRACHLOROETHENE	0.0013
TOLUENE	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001
TRICHLOROETHENE	<0.0005
TRICHLOROFLUOROMETHANE	<0.001
VINYL ACETATE	<0.01
VINYL CHLORIDE	<0.0005
-- SEMI-VOLATILE EXTRACTABLES --	
1,2,3-TRICHLOROPROPANE	<0.001
1,4-DIFLUOROBENZENE	<0.01

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	48	48
SAMPLE DATE	06/01/90	05/20/92
SAMPLE TIME	13:30	11:30
LAB	EL	EL
LAB NUMBER	90-14925	92-19279
SAMPLE NUMBER	HL-0690-200	HL-9205-110
-- VOLATILE ORGANICS --		
1,1,1,2-TETRACHLOROETHANE	<0.001	
1,1,1-TRICHLOROETHANE	0.00067	0.00054
1,1,2,2-TETRACHLOROETHANE	<0.001	<0.001
1,1,2-TRICHLOROETHANE	<0.001	<0.001
1,1-DICHLOROETHANE	<0.001	<0.001
1,1-DICHLOROETHENE	<0.0005	<0.0005
1,1-DICHLOROPROPENE	<0.001	
1,2-DIBROMOETHANE	<0.001	
1,2-DICHLOROETHANE	<0.0005	<0.0005
1,2-DICHLOROPROPANE	<0.001	
2,2-DICHLOROPROPANE	<0.001	
2-CHLOROETHYL VINYL ETHER		<0.01
2-CHLOROTOLUENE	<0.001	
4-BROMOFLUOROBENZENE		<0.01
4-CHLOROTOLUENE	<0.001	
BENZENE	<0.0005	<0.0005
BROMOBENZENE	<0.001	
BROMOCHLOROMETHANE	<0.001	<0.001
BROMODICHLOROMETHANE	<0.001	<0.001
BROMOFORM	<0.001	<0.001
BROMOMETHANE	<0.001	<0.001
CARBON TETRACHLORIDE	<0.0005	<0.0005
CHLOROBENZENE	<0.001	<0.001
CHLOROETHANE	<0.001	<0.001
CHLOROFORM	0.0016	0.0015
CHLOROMETHANE	<0.001	<0.001
CIS-1,2-DICHLOROETHENE	<0.001	
CIS-1,3-DICHLOROPROPENE	<0.001	<0.001
DIBROMOCHLOROMETHANE	<0.001	<0.001
DIBROMOMETHANE	<0.001	<0.001
DICHLORODIFLUOROMETHANE	0.001	0.0011
ETHYL METHACRYLATE		<0.01
ETHYLBENZENE	<0.001	<0.001
IODOMETHANE		<0.01
TOTAL XYLENE		<0.001
M-XYLENE	<0.001	
O-XYLENE	<0.001	
P-XYLENE	<0.001	
METHYLENE CHLORIDE	<0.001	<0.001
STYRENE	<0.001	<0.001
TETRACHLOROETHENE	0.0017	0.0013
TOLUENE	<0.001	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001	<0.001
TRICHLOROETHENE	<0.0005	<0.0005
TRICHLOROFLUOROMETHANE	<0.001	<0.001
VINYL ACETATE		<0.01
VINYL CHLORIDE	<0.0005	<0.0005
-- SEMI-VOLATILE EXTRACTABLES --		
1,2,3-TRICHLOROBENZENE	<0.001	
1,2,3-TRICHLOROPROPANE	<0.001	<0.001
1,2,4-TRICHLOROBENZENE	<0.001	
1,2,4-TRIMETHYLBENZENE	<0.001	
1,2-DIBROMO-3-CHLOROPROPANE	<0.001	
1,2-DICHLOROBENZENE	<0.001	
1,3,5-TRIMETHYLBENZENE	<0.001	

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	48	48
SAMPLE DATE	06/01/90	05/20/92
SAMPLE TIME	13:30	11:30
LAB	EL	EL
LAB NUMBER	90-14925	92-19279
SAMPLE NUMBER	HL-0690-200	HL-9205-110
-- SEMI-VOLATILE EXTRACTABLES --		
1,3-DICHLOROBENZENE	<0.001	
1,3-DICHLOROPROPANE	<0.001	
1,4-DICHLOROBENZENE	<0.0005	
1,4-DIFLUOROBENZENE		<0.01
DICHLOROMONOFLUOROMETHANE	<0.001	
HEXACHLOROBUTADIENE	<0.001	
ISOPROPYLBENZENE	<0.001	
N-BUTYLBENZENE	<0.001	
N-PROPYLBENZENE	<0.001	
NAPHTHALENE	<0.001	
P-ISOPROPYLTOLUENE	<0.001	
SEC-BUTYLBENZENE	<0.001	
TERT-BUTYLBENZENE	<0.001	

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	51	51
SAMPLE DATE	06/01/90	04/18/94
SAMPLE TIME	13:50	
LAB	EL	EL
LAB NUMBER	90-14926	94-16462
SAMPLE NUMBER	HL-0690-201	HL-1
-- VOLATILE ORGANICS --		
1,1,1,2-TETRACHLOROETHANE	<0.001	<0.001
1,1,1-TRICHLOROETHANE	0.00054	<0.001
1,1,2,2-TETRACHLOROETHANE	<0.001	<0.001
1,1,2-TRICHLOROETHANE	<0.001	<0.001
1,1-DICHLOROETHANE	<0.001	<0.001
1,1-DICHLOROETHENE	<0.0005	<0.001
1,1-DICHLOROPROPENE	<0.001	
1,2-DIBROMOETHANE	<0.001	<0.001
1,2-DICHLOROETHANE	<0.0005	<0.001
1,2-DICHLOROPROPANE	<0.001	<0.001
2,2-DICHLOROPROPANE	<0.001	
2-CHLOROTOLUENE	<0.001	
2-HEXANONE		<0.02
4-CHLOROTOLUENE	<0.001	
ACETONE		<0.05
ACRYLONITRILE		<0.02
BENZENE	<0.0005	<0.001
BROMOBENZENE	<0.001	
BROMOCHLOROMETHANE	<0.001	<0.001
BROMODICHLOROMETHANE	<0.001	<0.001
BROMOFORM	<0.001	<0.001
BROMOMETHANE	<0.001	<0.001
CARBON DISULFIDE		<0.001
CARBON TETRACHLORIDE	<0.0005	<0.001
CHLOROBENZENE	<0.001	<0.001
CHLOROETHANE	<0.001	<0.001
CHLOROFORM	0.0023	0.0047
CHLOROMETHANE	<0.001	<0.001
CIS-1,2-DICHLOROETHENE	<0.001	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001	<0.001
DIBROMOCHLOROMETHANE	<0.001	<0.001
DIBROMOMETHANE	<0.001	<0.001
DICHLORODIFLUOROMETHANE	0.0018	0.0022
DICHLOROFLUOROMETHANE		0.011
ETHYLBENZENE	<0.001	<0.001
IODOMETHANE		<0.001
M-XYLENE	<0.001	
O-XYLENE	<0.001	<0.001
P-XYLENE	<0.001	
METHYL ETHYL KETONE		<0.02
METHYL ISOBUTL KETONE		<0.02
METHYLENE CHLORIDE	<0.001	<0.001
STYRENE	<0.001	<0.001
TETRACHLOROETHENE	0.0017	0.0016
TOLUENE	<0.001	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001	<0.001
TRICHLOROETHENE	<0.0005	<0.001
TRICHLOROFLUOROMETHANE	<0.001	<0.001
VINYL ACETATE		<0.001
VINYL CHLORIDE	<0.0005	<0.001
-- SEMI-VOLATILE EXTRACTABLES --		
1,2,3-TRICHLOROBENZENE	<0.001	
1,2,3-TRICHLOROPROPANE	<0.001	<0.001
1,2,4-TRICHLOROBENZENE	<0.001	
1,2,4-TRIMETHYLBENZENE	<0.001	

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	51	51
SAMPLE DATE	06/01/90	04/18/94
SAMPLE TIME	13:50	
LAB	EL	EL
LAB NUMBER	90-14926	94-16462
SAMPLE NUMBER	HL-0690-201	HL-1
-- SEMI-VOLATILE EXTRACTABLES --		
1,2-DIBROMO-3-CHLOROPROPANE	<0.001	<0.001
1,2-DICHLOROBENZENE	<0.001	<0.001
1,3,5-TRIMETHYLBENZENE	<0.001	
1,3-DICHLOROBENZENE	<0.001	
1,3-DICHLOROPROPANE	<0.001	
TRANS-1,4-DICHLORO-2-BUTENE		<0.002
1,4-DICHLORO-2-BUTENE		<0.002
1,4-DICHLOROBENZENE	<0.0005	<0.001
DICHLOROMONOFLUOROMETHANE	<0.001	
HEXACHLOROBUTADIENE	<0.001	
ISOPROPYLBENZENE	<0.001	
N-BUTYLBENZENE	<0.001	
N-PROPYLBENZENE	<0.001	
NAPHTHALENE	<0.001	
P-ISOPROPYLTOLUENE	<0.001	
SEC-BUTYLBENZENE	<0.001	
TERT-BUTYLBENZENE	<0.001	
-- HYDROCARBONS --		
M+P-XYLENE		<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	52	52	52	52	52	52	52
SAMPLE DATE	04/04/91	05/28/92	12/01/92	12/01/92	05/26/93	05/26/93	01/04/94
SAMPLE TIME	13:30		08:15	08:30			14:55
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	91-12765	92-19789	92-50581	92-50582	93-21822	93-21823	94-3393
SAMPLE NUMBER	HL-9104-102	HL-9205-114	HL-9212-900	HL-9212-901	HL-3	HL-4	HL-104E5
-- VOLATILE ORGANICS --							
1,1,1,2-TETRACHLOROETHANE							<0.001
1,1,1-TRICHLOROETHANE	0.0006	0.00096	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,2,2-TETRACHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,2-TRICHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-DICHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-DICHLOROETHENE	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-DIBROMOETHANE							<0.001
1,2-DICHLOROETHANE	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-DICHLOROPROPANE							<0.001
2-BUTANONE (METHYL-ETHYL-KETONE)	<0.01						
2-CHLOROETHYL VINYL ETHER	<0.01	<0.01	<0.001	<0.001	<0.001	<0.001	
2-HEXANONE	<0.01						<0.02
4-BROMOFLUOROBENZENE	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
4-METHYL-2-PENTANONE	<0.01						
ACETONE	<0.01						<0.02
ACROLEIN	<0.01						
ACRYLONITRILE	<0.01						<0.02
BENZENE	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001
BROMOCHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMODICHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMOFORM	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMOMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CARBON DISULFIDE	<0.01						<0.001
CARBON TETRACHLORIDE	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROBENZENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROFORM	0.0043	0.007	0.004	0.0085	0.0053	0.0053	0.0051
CHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CIS-1,2-DICHLOROETHENE							<0.001
CIS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DIBROMOCHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DIBROMOMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DICHLORODIFLUOROMETHANE	0.0032	0.0031	0.0012	0.0037	0.003	0.0023	0.0014
ETHANOL	<0.01						
ETHYL METHACRYLATE	<0.01	<0.01	<0.001	<0.001	<0.001	<0.001	
ETHYLBENZENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
IODOMETHANE	<0.01	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001
TOTAL XYLENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
O-XYLENE							<0.001
METHYL ETHYL KETONE							<0.02
METHYL ISOBUTL KETONE							<0.02
METHYLENE CHLORIDE	<0.001	<0.001	0.0035	<0.001	<0.001	<0.001	<0.001
STYRENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TETRACHLOROETHENE	0.0022	0.0025	0.002	0.0041	0.0028	0.0027	0.0019
TOLUENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRICHLOROETHENE	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001
TRICHLOROFLUOROMETHANE	<0.001	0.0018	<0.001	0.0011	<0.001	<0.001	<0.001
VINYL ACETATE	<0.01	<0.01	<0.02	<0.02	<0.001	<0.001	<0.001
VINYL CHLORIDE	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001
-- SEMI-VOLATILE EXTRACTABLES --							
1,2,3-TRICHLOROPROPANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-DIBROMO-3-CHLOROPROPANE							<0.001
1,2-DICHLOROBENZENE							<0.001
1,4-DICHLORO-2-BUTENE	<0.01						<0.002

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	52	52	52	52	52	52	52
SAMPLE DATE	04/04/91	05/28/92	12/01/92	12/01/92	05/26/93	05/26/93	01/04/94
SAMPLE TIME	13:30		08:15	08:30			14:55
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	91-12765	92-19789	92-50581	92-50582	93-21822	93-21823	94-3393
SAMPLE NUMBER	HL-9104-102	HL-9205-114	HL-9212-900	HL-9212-901	HL-3	HL-4	HL-104E5
-- SEMI-VOLATILE EXTRACTABLES --							
1,4-DICHLOROBENZENE							<0.001
1,4-DIFLUOROBENZENE	<0.01	<0.01	<0.001	<0.001	<0.001	<0.001	

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	57
SAMPLE DATE	12/08/94
SAMPLE TIME	09:15
LAB	EL
LAB NUMBER	94-60432
SAMPLE NUMBER	HL-9412-103
-- VOLATILE ORGANICS --	
1,1,1,2-TETRACHLOROETHANE	<0.001
1,1,1-TRICHLOROETHANE	<0.001
1,1,2,2-TETRACHLOROETHANE	<0.001
1,1,2-TRICHLOROETHANE	<0.001
1,1-DICHLOROETHANE	<0.001
1,1-DICHLOROETHENE	<0.001
1,2-DIBROMOETHANE	<0.001
1,2-DICHLOROETHANE	<0.001
1,2-DICHLOROPROPANE	<0.001
2-HEXANONE	<0.02
ACETONE	<0.05
ACRYLONITRILE	<0.02
BENZENE	<0.001
BROMOCHLOROMETHANE	<0.001
BROMODICHLOROMETHANE	<0.001
BROMOFORM	<0.001
BROMOMETHANE	<0.001
CARBON DISULFIDE	0.0021
CARBON TETRACHLORIDE	<0.001
CHLOROBENZENE	<0.001
CHLOROETHANE	<0.001
CHLOROFORM	0.0018
CHLOROMETHANE	<0.001
CIS-1,2-DICHLOROETHENE	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001
DIBROMOCHLOROMETHANE	<0.001
DIBROMOMETHANE	<0.001
DICHLORODIFLUOROMETHANE	0.0012
ETHYLBENZENE	<0.001
IODOMETHANE	<0.001
O-XYLENE	<0.001
METHYL ETHYL KETONE	<0.02
METHYL ISOBUTL KETONE	<0.02
METHYLENE CHLORIDE	<0.001
STYRENE	<0.001
TETRACHLOROETHENE	0.0015
TOLUENE	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001
TRICHLOROETHENE	<0.001
TRICHLOROFLUOROMETHANE	<0.001
VINYL ACETATE	<0.001
VINYL CHLORIDE	<0.001
-- SEMI-VOLATILE EXTRACTABLES --	
1,2,3-TRICHLOROPROPANE	<0.001
1,2-DIBROMO-3-CHLOROPROPANE	<0.005
1,2-DICHLOROBENZENE	<0.001
TRANS-1,4-DICHLORO-2-BUTENE	<0.002
1,4-DICHLOROBENZENE	<0.001
-- HYDROCARBONS --	
M+P-XYLENE	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	59	59	59	59	59	59	59
SAMPLE DATE	06/01/90	04/04/91	01/22/92	05/20/92	12/01/92	05/26/93	01/04/94
SAMPLE TIME	14:50	14:00	11:40	10:20	13:15		14:00
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	90-14927	91-12766	92-4688	92-19277	92-50583	93-21824	94-3394
SAMPLE NUMBER	HL-0690-202	HL-9104-103	HL-9201-105	HL-9205-102	HL-9212-902	HL-5	HL-104S3
-- VOLATILE ORGANICS --							
1,1,1,2-TETRACHLOROETHANE	<0.001						<0.001
1,1,1-TRICHLOROETHANE	<0.0005	<0.0005	0.00051	<0.0005	<0.001	<0.001	<0.001
1,1,2,2-TETRACHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,2-TRICHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-DICHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-DICHLOROETHENE	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001
1,1-DICHLOROPROPENE	<0.001						
1,2-DIBROMOETHANE	<0.001						<0.001
1,2-DICHLOROETHANE	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001
1,2-DICHLOROPROPANE	<0.001						<0.001
2,2-DICHLOROPROPANE	<0.001						
2-BUTANONE (METHYL-ETHYL-KETONE)		<0.01					
2-CHLOROETHYL VINYL ETHER		<0.01	<0.01	<0.01	<0.001	<0.001	
2-CHLOROTOLUENE	<0.001						
2-HEXANONE		<0.01					<0.02
4-BROMOFLUOROBENZENE		<0.01	<0.01	<0.01	<0.01	<0.01	
4-CHLOROTOLUENE	<0.001						
4-METHYL-2-PENTANONE		<0.01					
ACETONE		<0.01					<0.02
ACROLEIN		<0.01					
ACRYLONITRILE		<0.01					<0.02
BENZENE	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001
BROMOBENZENE	<0.001						
BROMOCHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMODICHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMOFORM	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMOMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CARBON DISULFIDE		<0.01					<0.001
CARBON TETRACHLORIDE	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001
CHLOROBENZENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROFORM	0.0016	0.0018	0.0013	0.0013	0.0042	0.0014	0.0015
CHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CIS-1,2-DICHLOROETHENE	<0.001						<0.001
CIS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DIBROMOCHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DIBROMOMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DICHLORODIFLUOROMETHANE	0.0013	0.0024	0.0018	0.0026	0.0023	0.002	<0.001
ETHANOL		<0.01					
ETHYL METHACRYLATE		<0.01	<0.01	<0.01	<0.001	<0.001	
ETHYLBENZENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
IODOMETHANE		<0.01	<0.01	<0.01	<0.001	<0.001	<0.001
TOTAL XYLENE		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
M-XYLENE	<0.001						
O-XYLENE	<0.001						<0.001
P-XYLENE	<0.001						
METHYL ETHYL KETONE							<0.02
METHYL ISOBUTL KETONE							<0.02
METHYLENE CHLORIDE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
STYRENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TETRACHLOROETHENE	0.0011	0.0013	0.0016	0.0015	0.004	0.0016	0.0014
TOLUENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRICHLOROETHENE	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001
TRICHLOROFLUOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
VINYL ACETATE		<0.01	<0.01	<0.01	<0.02	<0.001	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	59	59	59	59	59	59	59
SAMPLE DATE	06/01/90	04/04/91	01/22/92	05/20/92	12/01/92	05/26/93	01/04/94
SAMPLE TIME	14:50	14:00	11:40	10:20	13:15		14:00
LAB	EL	EL	EL	EL	EL	EL	EL
LAB NUMBER	90-14927	91-12766	92-4688	92-19277	92-50583	93-21824	94-3394
SAMPLE NUMBER	HL-0690-202	HL-9104-103	HL-9201-105	HL-9205-102	HL-9212-902	HL-5	HL-104S3
-- VOLATILE ORGANICS --							
VINYL CHLORIDE	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001
-- SEMI-VOLATILE EXTRACTABLES --							
1,2,3-TRICHLOROBENZENE	<0.001						
1,2,3-TRICHLOROPROPANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2,4-TRICHLOROBENZENE	<0.001						
1,2,4-TRIMETHYLBENZENE	<0.001						
1,2-DIBROMO-3-CHLOROPROPANE	<0.001						<0.001
1,2-DICHLOROBENZENE	<0.001						<0.001
1,3,5-TRIMETHYLBENZENE	<0.001						
1,3-DICHLOROBENZENE	<0.001						
1,3-DICHLOROPROPANE	<0.001						
1,4-DICHLORO-2-BUTENE		<0.01					<0.002
1,4-DICHLOROBENZENE	<0.0005						<0.001
1,4-DIFLUOROBENZENE		<0.01	<0.01	<0.01	<0.001	<0.001	
DICHLOROMONOFLUOROMETHANE	<0.001						
HEXACHLOROBUTADIENE	<0.001						
ISOPROPYLBENZENE	<0.001						
N-BUTYLBENZENE	<0.001						
N-PROPYLBENZENE	<0.001						
NAPHTHALENE	<0.001						
P-ISOPROPYLTOLUENE	<0.001						
SEC-BUTYLBENZENE	<0.001						
TERT-BUTYLBENZENE	<0.001						

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	59
SAMPLE DATE	04/18/94
LAB	EL
LAB NUMBER	94-16465
SAMPLE NUMBER	HL-4
-- VOLATILE ORGANICS --	
1,1,1,2-TETRACHLOROETHANE	<0.001
1,1,1-TRICHLOROETHANE	<0.001
1,1,2,2-TETRACHLOROETHANE	<0.001
1,1,2-TRICHLOROETHANE	<0.001
1,1-DICHLOROETHANE	<0.001
1,1-DICHLOROETHENE	<0.001
1,2-DIBROMOETHANE	<0.001
1,2-DICHLOROETHANE	<0.001
1,2-DICHLOROPROPANE	<0.001
2-HEXANONE	<0.02
ACETONE	<0.05
ACRYLONITRILE	<0.02
BENZENE	<0.001
BROMOCHLOROMETHANE	<0.001
BROMODICHLOROMETHANE	<0.001
BROMOFORM	<0.001
BROMOMETHANE	<0.001
CARBON DISULFIDE	<0.001
CARBON TETRACHLORIDE	<0.001
CHLOROBENZENE	<0.001
CHLOROETHANE	<0.001
CHLOROFORM	0.0015
CHLOROMETHANE	<0.001
CIS-1,2-DICHLOROETHENE	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001
DIBROMOCHLOROMETHANE	<0.001
DIBROMOMETHANE	<0.001
DICHLORODIFLUOROMETHANE	0.0013
DICHLOROFLUOROMETHANE	<0.001
ETHYLBENZENE	<0.001
IODOMETHANE	<0.001
O-XYLENE	<0.001
METHYL ETHYL KETONE	<0.02
METHYL ISOBUTL KETONE	<0.02
METHYLENE CHLORIDE	<0.001
STYRENE	<0.001
TETRACHLOROETHENE	0.0011
TOLUENE	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001
TRICHLOROETHENE	<0.001
TRICHLOROFLUOROMETHANE	<0.001
VINYL ACETATE	<0.001
VINYL CHLORIDE	<0.001
-- SEMI-VOLATILE EXTRACTABLES --	
1,2,3-TRICHLOROPROPANE	<0.001
1,2-DIBROMO-3-CHLOROPROPANE	<0.001
1,2-DICHLOROBENZENE	<0.001
TRANS-1,4-DICHLORO-2-BUTENE	<0.002
1,4-DICHLORO-2-BUTENE	<0.002
1,4-DICHLOROBENZENE	<0.001
-- HYDROCARBONS --	
M+P-XYLENE	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	62
SAMPLE DATE	12/08/94
SAMPLE TIME	08:30
LAB	EL
LAB NUMBER	94-60434
SAMPLE NUMBER	HL-9412-105
-- VOLATILE ORGANICS --	
1,1,1,2-TETRACHLOROETHANE	<0.001
1,1,1-TRICHLOROETHANE	<0.001
1,1,2,2-TETRACHLOROETHANE	<0.001
1,1,2-TRICHLOROETHANE	<0.001
1,1-DICHLOROETHANE	<0.001
1,1-DICHLOROETHENE	<0.001
1,2-DIBROMOETHANE	<0.001
1,2-DICHLOROETHANE	<0.001
1,2-DICHLOROPROPANE	<0.001
2-HEXANONE	<0.02
ACETONE	<0.05
ACRYLONITRILE	<0.02
BENZENE	<0.001
BROMOCHLOROMETHANE	<0.001
BROMODICHLOROMETHANE	<0.001
BROMOFORM	<0.001
BROMOMETHANE	<0.001
CARBON DISULFIDE	<0.001
CARBON TETRACHLORIDE	<0.001
CHLOROBENZENE	<0.001
CHLOROETHANE	<0.001
CHLOROFORM	0.0071
CHLOROMETHANE	<0.001
CIS-1,2-DICHLOROETHENE	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001
DIBROMOCHLOROMETHANE	<0.001
DIBROMOMETHANE	<0.001
DICHLORODIFLUOROMETHANE	0.0022
ETHYLBENZENE	<0.001
IODOMETHANE	<0.001
O-XYLENE	<0.001
METHYL ETHYL KETONE	<0.02
METHYL ISOBUTL KETONE	<0.02
METHYLENE CHLORIDE	<0.001
STYRENE	<0.001
TETRACHLOROETHENE	0.0027
TOLUENE	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001
TRICHLOROETHENE	<0.001
TRICHLOROFLUOROMETHANE	<0.001
VINYL ACETATE	<0.001
VINYL CHLORIDE	<0.001
-- SEMI-VOLATILE EXTRACTABLES --	
1,2,3-TRICHLOROPROPANE	<0.001
1,2-DIBROMO-3-CHLOROPROPANE	<0.005
1,2-DICHLOROBENZENE	<0.001
TRANS-1,4-DICHLORO-2-BUTENE	<0.002
1,4-DICHLOROBENZENE	<0.001
-- HYDROCARBONS --	
M+P-XYLENE	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	67	67
SAMPLE DATE	06/01/90	06/01/90
SAMPLE TIME	16:05	16:00
LAB	EL	EL
LAB NUMBER	90-14928	90-14929
REMARKS	DEEP	SHALLOW
SAMPLE NUMBER	HL-0690-203	HL-0690-204
-- VOLATILE ORGANICS --		
1,1,1,2-TETRACHLOROETHANE	<0.001	<0.001
1,1,1-TRICHLOROETHANE	<0.0005	<0.0005
1,1,2,2-TETRACHLOROETHANE	<0.001	<0.001
1,1,2-TRICHLOROETHANE	<0.001	<0.001
1,1-DICHLOROETHANE	<0.001	<0.001
1,1-DICHLOROETHENE	<0.0005	<0.0005
1,1-DICHLOROPROPENE	<0.001	<0.001
1,2-DIBROMOETHANE	<0.001	<0.001
1,2-DICHLOROETHANE	<0.0005	<0.0005
1,2-DICHLOROPROPANE	<0.001	<0.001
2,2-DICHLOROPROPANE	<0.001	<0.001
2-CHLOROTOLUENE	<0.001	<0.001
4-CHLOROTOLUENE	<0.001	<0.001
BENZENE	<0.0005	<0.0005
BROMOBENZENE	<0.001	<0.001
BROMOCHLOROMETHANE	<0.001	<0.001
BROMODICHLOROMETHANE	<0.001	<0.001
BROMOFORM	<0.001	<0.001
BROMOMETHANE	<0.001	<0.001
CARBON TETRACHLORIDE	<0.0005	<0.0005
CHLOROBENZENE	<0.001	<0.001
CHLOROETHANE	<0.001	<0.001
CHLOROFORM	<0.001	0.0011
CHLOROMETHANE	<0.001	<0.001
CIS-1,2-DICHLOROETHENE	<0.001	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001	<0.001
DIBROMOCHLOROMETHANE	<0.001	<0.001
DIBROMOMETHANE	<0.001	<0.001
DICHLORODIFLUOROMETHANE	<0.001	<0.001
ETHYLBENZENE	<0.001	<0.001
M-XYLENE	<0.001	<0.001
O-XYLENE	<0.001	<0.001
P-XYLENE	<0.001	<0.001
METHYLENE CHLORIDE	<0.001	<0.001
STYRENE	<0.001	<0.001
TETRACHLOROETHENE	<0.0005	0.00064
TOLUENE	<0.001	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001	<0.001
TRICHLOROETHENE	<0.0005	<0.0005
TRICHLOROFLUOROMETHANE	<0.001	<0.001
VINYL CHLORIDE	<0.0005	<0.0005
-- SEMI-VOLATILE EXTRACTABLES --		
1,2,3-TRICHLOROBENZENE	<0.001	<0.001
1,2,3-TRICHLOROPROPANE	<0.001	<0.001
1,2,4-TRICHLOROBENZENE	<0.001	<0.001
1,2,4-TRIMETHYLBENZENE	<0.001	<0.001
1,2-DIBROMO-3-CHLOROPROPANE	<0.001	<0.001
1,2-DICHLOROBENZENE	<0.001	<0.001
1,3,5-TRIMETHYLBENZENE	<0.001	<0.001
1,3-DICHLOROBENZENE	<0.001	<0.001
1,3-DICHLOROPROPANE	<0.001	<0.001
1,4-DICHLOROBENZENE	<0.0005	<0.0005
DICHLOROMONOFLUOROMETHANE	<0.001	<0.001
HEXACHLOROBUTADIENE	<0.001	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	67	67
SAMPLE DATE	06/01/90	06/01/90
SAMPLE TIME	16:05	16:00
LAB	EL	EL
LAB NUMBER	90-14928	90-14929
REMARKS	DEEP	SHALLOW
SAMPLE NUMBER	HL-0690-203	HL-0690-204
-- SEMI-VOLATILE EXTRACTABLES --		
ISOPROPYLBENZENE	<0.001	<0.001
N-BUTYLBENZENE	<0.001	<0.001
N-PROPYLBENZENE	<0.001	<0.001
NAPHTHALENE	<0.001	<0.001
P-ISOPROPYLTOLUENE	<0.001	<0.001
SEC-BUTYLBENZENE	<0.001	<0.001
TERT-BUTYLBENZENE	<0.001	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	68
SAMPLE DATE	04/04/91
SAMPLE TIME	12:00
LAB	EL
LAB NUMBER	91-12764
SAMPLE NUMBER	HL-9104-101
-- VOLATILE ORGANICS --	
1,1,1-TRICHLOROETHANE	<0.0005
1,1,2,2-TETRACHLOROETHANE	<0.001
1,1,2-TRICHLOROETHANE	<0.001
1,1-DICHLOROETHANE	<0.001
1,1-DICHLOROETHENE	<0.0005
1,2-DICHLOROETHANE	<0.0005
2-BUTANONE (METHYL-ETHYL-KETONE)	<0.01
2-CHLOROETHYL VINYL ETHER	<0.01
2-HEXANONE	<0.01
4-BROMOFLUOROBENZENE	<0.01
4-METHYL-2-PENTANONE	<0.01
ACETONE	<0.01
ACROLEIN	<0.01
ACRYLONITRILE	<0.01
BENZENE	<0.0005
BROMOCHLOROMETHANE	<0.001
BROMODICHLOROMETHANE	<0.001
BROMOFORM	<0.001
BROMOMETHANE	<0.001
CARBON DISULFIDE	<0.01
CARBON TETRACHLORIDE	<0.0005
CHLOROBENZENE	<0.001
CHLOROETHANE	<0.001
CHLOROFORM	<0.001
CHLOROMETHANE	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001
DIBROMOCHLOROMETHANE	<0.001
DIBROMOMETHANE	<0.001
DICHLORODIFLUOROMETHANE	<0.001
ETHANOL	<0.01
ETHYL METHACRYLATE	<0.01
ETHYLBENZENE	<0.001
IODOMETHANE	<0.01
TOTAL XYLENE	<0.001
METHYLENE CHLORIDE	<0.001
STYRENE	<0.001
TETRACHLOROETHENE	<0.0005
TOLUENE	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001
TRICHLOROETHENE	<0.0005
TRICHLOROFLUOROMETHANE	<0.001
VINYL ACETATE	<0.01
VINYL CHLORIDE	<0.0005
-- SEMI-VOLATILE EXTRACTABLES --	
1,2,3-TRICHLOROPROPANE	<0.001
1,4-DICHLORO-2-BUTENE	<0.01
1,4-DIFLUOROBENZENE	<0.01

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	75	75	75	75	75	75	75
SAMPLE DATE	01/22/92	05/20/92	12/01/92	05/26/93	01/04/94	04/18/94	12/08/94
SAMPLE TIME	13:30	10:45	14:05		14:40		09:00
LAB	EL	EL	EL	EL	EL	EL	HYDRO
LAB NUMBER	92-4690	92-19278	92-50585	93-21826	94-3396	94-16466	
REMARKS							NO SAMPLE
SAMPLE NUMBER	HL-9201-107	HL-9205-100	HL-9212-904	HL-7	HL-104C4	HL-5	HL-9412-106
-- VOLATILE ORGANICS --							
1,1,1,2-TETRACHLOROETHANE					<0.001	<0.001	
1,1,1-TRICHLOROETHANE	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	
1,1,2,2-TETRACHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
1,1,2-TRICHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
1,1-DICHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
1,1-DICHLOROETHENE	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	
1,2-DIBROMOETHANE					<0.001	<0.001	
1,2-DICHLOROETHANE	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	
1,2-DICHLOROPROPANE					<0.001	<0.001	
2-CHLOROETHYL VINYL ETHER	<0.01	<0.01	<0.001	<0.001			
2-HEXANONE					<0.02	<0.02	
4-BROMOFLUOROBENZENE	<0.01	<0.01	<0.01	<0.01			
ACETONE					<0.02	<0.05	
ACRYLONITRILE					<0.02	<0.02	
BENZENE	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	
BROMOCHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
BROMODICHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
BROMOFORM	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
BROMOMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
CARBON DISULFIDE					<0.001	<0.001	
CARBON TETRACHLORIDE	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	
CHLOROBENZENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
CHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
CHLOROFORM	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
CHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
CIS-1,2-DICHLOROETHENE					<0.001	<0.001	
CIS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
DIBROMOCHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
DIBROMOMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
DICHLORODIFLUOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
DICHLOROFLUOROMETHANE						<0.001	
ETHYL METHACRYLATE	<0.01	<0.01	<0.001	<0.001			
ETHYLBENZENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
IODOMETHANE	<0.01	<0.01	<0.001	<0.001	<0.001	<0.001	
TOTAL XYLENE	<0.001	<0.001	<0.001	<0.001	<0.001		
O-XYLENE					<0.001	<0.001	
METHYL ETHYL KETONE					<0.02	<0.02	
METHYL ISOBUTL KETONE					<0.02	<0.02	
METHYLENE CHLORIDE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
STYRENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
TETRACHLOROETHENE	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	
TOLUENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
TRANS-1,2-DICHLOROETHENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
TRANS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
TRICHLOROETHENE	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	
TRICHLOROFLUOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
VINYL ACETATE	<0.01	<0.01	<0.02	<0.001	<0.001	<0.001	
VINYL CHLORIDE	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	
-- SEMI-VOLATILE EXTRACTABLES --							
1,2,3-TRICHLOROPROPANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
1,2-DIBROMO-3-CHLOROPROPANE					<0.001	<0.001	
1,2-DICHLOROBENZENE					<0.001	<0.001	
TRANS-1,4-DICHLORO-2-BUTENE						<0.002	
1,4-DICHLORO-2-BUTENE					<0.002	<0.002	
1,4-DICHLOROBENZENE					<0.001	<0.001	

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	75	75	75	75	75	75	75
SAMPLE DATE	01/22/92	05/20/92	12/01/92	05/26/93	01/04/94	04/18/94	12/08/94
SAMPLE TIME	13:30	10:45	14:05		14:40		09:00
LAB	EL	EL	EL	EL	EL	EL	HYDRO
LAB NUMBER	92-4690	92-19278	92-50585	93-21826	94-3396	94-16466	
REMARKS							NO SAMPLE
SAMPLE NUMBER	HL-9201-107	HL-9205-100	HL-9212-904	HL-7	HL-104C4	HL-5	HL-9412-106
-- SEMI-VOLATILE EXTRACTABLES --							
1,4-DIFLUOROBENZENE	<0.01	<0.01	<0.001	<0.001			
-- HYDROCARBONS --							
M+P-XYLENE						<0.001	

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	84	84	84	84	84
SAMPLE DATE	06/06/90	04/18/94	08/25/94	09/27/94	12/08/94
SAMPLE TIME	12:45		09:45		09:30
LAB	EL	EL	HYDRO	EL	EL
LAB NUMBER	90-15044	94-16469		94-47472	94-60436
REMARKS			NO SAMPLE		
OTHER INFO			NO DEPTH TAKE		
SAMPLE NUMBER	HL-9006-106	HL-8	HL-9408-109	HL-9409-100	HL-9412-109
-- VOLATILE ORGANICS --					
1,1,1,2-TETRACHLOROETHANE	<0.001	<0.001		<0.001	<0.001
1,1,1-TRICHLOROETHANE	<0.0005	<0.001		<0.001	<0.001
1,1,2,2-TETRACHLOROETHANE	<0.001	<0.001		<0.001	<0.001
1,1,2-TRICHLOROETHANE	<0.001	<0.001		<0.001	<0.001
1,1-DICHLOROETHANE	<0.001	<0.001		<0.001	<0.001
1,1-DICHLOROETHENE	<0.0005	<0.001		<0.001	<0.001
1,1-DICHLOROPROPENE	<0.001				
1,2-DIBROMOETHANE	<0.001	<0.001		<0.001	<0.001
1,2-DICHLOROETHANE	<0.0005	<0.001		<0.001	<0.001
1,2-DICHLOROPROPANE	<0.001	<0.001		<0.001	<0.001
2,2-DICHLOROPROPANE	<0.001				
2-CHLOROTOLUENE	<0.001				
2-HEXANONE		<0.02		<0.02	<0.02
4-CHLOROTOLUENE	<0.001				
ACETONE		<0.05		<0.05	<0.05
ACRYLONITRILE		<0.02		<0.02	<0.02
BENZENE	<0.0005	<0.001		<0.001	<0.001
BROMOBENZENE	<0.001				
BROMOCHLOROMETHANE	<0.001	<0.001		<0.001	<0.001
BROMODICHLOROMETHANE	<0.001	<0.001		<0.001	<0.001
BROMOFORM	<0.001	<0.001		<0.001	<0.001
BROMOMETHANE	<0.001	<0.001		<0.001	<0.001
CARBON DISULFIDE		<0.001		<0.001	<0.001
CARBON TETRACHLORIDE	<0.0005	<0.001		<0.001	<0.001
CHLOROBENZENE	<0.001	<0.001		<0.001	<0.001
CHLOROETHANE	<0.001	<0.001		<0.001	<0.001
CHLOROFORM	<0.001	<0.001		<0.001	<0.001
CHLOROMETHANE	<0.001	<0.001		<0.001	<0.001
CIS-1,2-DICHLOROETHENE	<0.001	<0.001		<0.001	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001	<0.001		<0.001	<0.001
DIBROMOCHLOROMETHANE	<0.001	<0.001		<0.001	<0.001
DIBROMOMETHANE	<0.001	<0.001		<0.001	<0.001
DICHLORODIFLUOROMETHANE	<0.001	<0.001		<0.001	<0.001
DICHLOROFLUOROMETHANE		<0.001			
ETHYLBENZENE	<0.001	<0.001		<0.001	<0.001
IODOMETHANE		<0.001		<0.001	<0.001
M-XYLENE	<0.001				
O-XYLENE	<0.001	<0.001		<0.001	<0.001
P-XYLENE	<0.001				
METHYL ETHYL KETONE				<0.02	
METHYL ETHYL KETONE		<0.02			<0.02
METHYL ISOBUTL KETONE		<0.02		<0.02	<0.02
METHYLENE CHLORIDE	<0.001	<0.001		<0.001	<0.001
STYRENE	<0.001	<0.001		<0.001	<0.001
TETRACHLOROETHENE	<0.0005	<0.001		<0.001	<0.001
TOLUENE	<0.001	<0.001		<0.001	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001	<0.001		<0.001	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001	<0.001		<0.001	<0.001
TRICHLOROETHENE	<0.0005	<0.001		<0.001	<0.001
TRICHLOROFLUOROMETHANE	<0.001	<0.001		<0.001	<0.001
VINYL ACETATE		<0.001		<0.001	<0.001
VINYL CHLORIDE	<0.0005	<0.001		<0.001	<0.001
-- SEMI-VOLATILE EXTRACTABLES --					
1,2,3-TRICHLOROBENZENE	<0.001				

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	84	84	84	84	84
SAMPLE DATE	06/06/90	04/18/94	08/25/94	09/27/94	12/08/94
SAMPLE TIME	12:45		09:45		09:30
LAB	EL	EL	HYDRO	EL	EL
LAB NUMBER	90-15044	94-16469		94-47472	94-60436
REMARKS			NO SAMPLE		
OTHER INFO			NO DEPTH TAKE		
SAMPLE NUMBER	HL-9006-106	HL-8	HL-9408-109	HL-9409-100	HL-9412-109
-- SEMI-VOLATILE EXTRACTABLES --					
1,2,3-TRICHLOROPROPANE	<0.001	<0.001		<0.001	<0.001
1,2,4-TRICHLOROBENZENE	<0.001				
1,2,4-TRIMETHYLBENZENE	<0.001				
1,2-DIBROMO-3-CHLOROPROPANE	<0.001	<0.001		<0.005	<0.005
1,2-DICHLOROBENZENE	<0.001	<0.001		<0.001	<0.001
1,3,5-TRIMETHYLBENZENE	<0.001				
1,3-DICHLOROBENZENE	<0.001				
1,3-DICHLOROPROPANE	<0.001				
TRANS-1,4-DICHLORO-2-BUTENE		<0.002		<0.002	<0.002
1,4-DICHLORO-2-BUTENE		<0.002			
1,4-DICHLOROBENZENE	<0.0005	<0.001		<0.001	<0.001
DICHLOROMONOFLUOROMETHANE	<0.001				
HEXACHLOROBUTADIENE	<0.001				
ISOPROPYLBENZENE	<0.001				
N-BUTYLBENZENE	<0.001				
N-PROPYLBENZENE	<0.001				
NAPHTHALENE	<0.001				
P-ISOPROPYLTOLUENE	<0.001				
SEC-BUTYLBENZENE	<0.001				
TERT-BUTYLBENZENE	<0.001				
-- HYDROCARBONS --					
M+P-XYLENE		<0.001		<0.001	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	87
SAMPLE DATE	05/28/93
LAB	EL
LAB NUMBER	93-21828
SAMPLE NUMBER	HL-9
-- VOLATILE ORGANICS --	
1,1,1-TRICHLOROETHANE	<0.001
1,1,2,2-TETRACHLOROETHANE	<0.001
1,1,2-TRICHLOROETHANE	<0.001
1,1-DICHLOROETHANE	<0.001
1,1-DICHLOROETHENE	<0.001
1,2-DICHLOROETHANE	<0.001
2-CHLOROETHYL VINYL ETHER	<0.001
4-BROMOFLUOROBENZENE	<0.01
BENZENE	<0.001
BROMOCHLOROMETHANE	<0.001
BROMODICHLOROMETHANE	<0.001
BROMOFORM	<0.001
BROMOMETHANE	<0.001
CARBON TETRACHLORIDE	<0.001
CHLOROBENZENE	<0.001
CHLOROETHANE	<0.001
CHLOROFORM	0.0011
CHLOROMETHANE	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001
DIBROMOCHLOROMETHANE	<0.001
DIBROMOMETHANE	<0.001
DICHLORODIFLUOROMETHANE	<0.001
ETHYL METHACRYLATE	<0.001
ETHYLBENZENE	<0.001
IODOMETHANE	<0.001
TOTAL XYLENE	<0.001
METHYLENE CHLORIDE	<0.001
STYRENE	<0.001
TETRACHLOROETHENE	<0.001
TOLUENE	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001
TRICHLOROETHENE	<0.001
TRICHLOROFLUOROMETHANE	<0.001
VINYL ACETATE	<0.001
VINYL CHLORIDE	<0.001
-- SEMI-VOLATILE EXTRACTABLES --	
1,2,3-TRICHLOROPROPANE	<0.001
1,4-DIFLUOROBENZENE	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	92
SAMPLE DATE	12/08/94
LAB	HYDRO
LAB NUMBER	
REMARKS	NO SAMPLE
SAMPLE NUMBER	HL-9412-107

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	93
SAMPLE DATE	12/20/94
SAMPLE TIME	09:30
LAB	EL
LAB NUMBER	94-61429
SAMPLE NUMBER	HL-9412-110
-- VOLATILE ORGANICS --	
1,1,1,2-TETRACHLOROETHANE	<0.001
1,1,1-TRICHLOROETHANE	<0.001
1,1,2,2-TETRACHLOROETHANE	<0.001
1,1,2-TRICHLOROETHANE	<0.001
1,1-DICHLOROETHANE	<0.001
1,1-DICHLOROETHENE	<0.001
1,2-DIBROMOETHANE	<0.001
1,2-DICHLOROETHANE	<0.001
1,2-DICHLOROPROPANE	<0.001
2-HEXANONE	<0.02
ACETONE	<0.05
ACRYLONITRILE	<0.02
BENZENE	<0.001
BROMOCHLOROMETHANE	<0.001
BROMODICHLOROMETHANE	<0.001
BROMOFORM	<0.001
BROMOMETHANE	<0.001
CARBON DISULFIDE	<0.001
CARBON TETRACHLORIDE	<0.001
CHLOROBENZENE	<0.001
CHLOROETHANE	<0.001
CHLOROFORM	0.0018
CHLOROMETHANE	<0.001
CIS-1,2-DICHLOROETHENE	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001
DIBROMOCHLOROMETHANE	<0.001
DIBROMOMETHANE	<0.001
DICHLORODIFLUOROMETHANE	<0.001
ETHYLBENZENE	<0.001
IODOMETHANE	<0.001
O-XYLENE	<0.001
METHYL ETHYL KETONE	<0.02
METHYL ISOBUTL KETONE	<0.02
METHYLENE CHLORIDE	<0.001
STYRENE	<0.001
TETRACHLOROETHENE	<0.001
TOLUENE	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001
TRICHLOROETHENE	<0.001
TRICHLOROFLUOROMETHANE	<0.001
VINYL ACETATE	<0.001
VINYL CHLORIDE	<0.001
-- SEMI-VOLATILE EXTRACTABLES --	
1,2,3-TRICHLOROPROPANE	<0.001
1,2-DIBROMO-3-CHLOROPROPANE	<0.001
1,2-DICHLOROBENZENE	<0.001
TRANS-1,4-DICHLORO-2-BUTENE	<0.002
1,4-DICHLOROBENZENE	<0.001
-- HYDROCARBONS --	
M+P-XYLENE	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Private Well

SITE CODE	96
SAMPLE DATE	12/08/94
SAMPLE TIME	14:00
LAB	EL
LAB NUMBER	94-60435
SAMPLE NUMBER	HL-9412-108
-- VOLATILE ORGANICS --	
1,1,1,2-TETRACHLOROETHANE	<0.001
1,1,1-TRICHLOROETHANE	<0.001
1,1,2,2-TETRACHLOROETHANE	<0.001
1,1,2-TRICHLOROETHANE	<0.001
1,1-DICHLOROETHANE	<0.001
1,1-DICHLOROETHENE	<0.001
1,2-DIBROMOETHANE	<0.001
1,2-DICHLOROETHANE	<0.001
1,2-DICHLOROPROPANE	<0.001
2-HEXANONE	<0.02
ACETONE	<0.05
ACRYLONITRILE	<0.02
BENZENE	<0.001
BROMOCHLOROMETHANE	<0.001
BROMODICHLOROMETHANE	<0.001
BROMOFORM	<0.001
BROMOMETHANE	<0.001
CARBON DISULFIDE	<0.001
CARBON TETRACHLORIDE	<0.001
CHLOROBENZENE	<0.001
CHLOROETHANE	<0.001
CHLOROFORM	<0.001
CHLOROMETHANE	<0.001
CIS-1,2-DICHLOROETHENE	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001
DIBROMOCHLOROMETHANE	<0.001
DIBROMOMETHANE	<0.001
DICHLORODIFLUOROMETHANE	<0.001
ETHYLBENZENE	<0.001
IODOMETHANE	<0.001
O-XYLENE	<0.001
METHYL ETHYL KETONE	<0.02
METHYL ISOBUTL KETONE	<0.02
METHYLENE CHLORIDE	<0.001
STYRENE	<0.001
TETRACHLOROETHENE	<0.001
TOLUENE	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001
TRICHLOROETHENE	<0.001
TRICHLOROFLUOROMETHANE	<0.001
VINYL ACETATE	<0.001
VINYL CHLORIDE	<0.001
-- SEMI-VOLATILE EXTRACTABLES --	
1,2,3-TRICHLOROPROPANE	<0.001
1,2-DIBROMO-3-CHLOROPROPANE	<0.005
1,2-DICHLOROBENZENE	<0.001
TRANS-1,4-DICHLORO-2-BUTENE	<0.002
1,4-DICHLOROBENZENE	<0.001
-- HYDROCARBONS --	
M+P-XYLENE	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Quality Control

SITE CODE	BLANK	BLANK	BLANK
SAMPLE DATE	11/11/89	05/07/90	01/22/92
SAMPLE TIME	19:00	09:15	08:30
LAB	EL	EL	EL
LAB NUMBER	89-20184	90-10832	92-4685
SAMPLE NUMBER	HL-8911-005	HL-9005-115	HL-9201-102
-- PHYSICAL PARAMETERS --			
PH			5.4
SC (UMHOS/CM AT 25 C)			2.0
TDS (MEASURED AT 180 C)			<1.0
TOTAL SUSPENDED SOLIDS			<1.0
-- MAJOR CONSTITUENTS --			
CALCIUM (CA) DIS			<1.0
MAGNESIUM (MG) DIS			<1.0
SODIUM (NA) DIS			<1.0
POTASSIUM (K) DIS			<1.0
TOTAL ALKALINITY AS CACO3			2.0
BICARBONATE (HCO3)			2.0
CARBONATE AS CO3			0.0
SULFATE (SO4)			<1.0
CHLORIDE (CL)			<1.0
-- NUTRIENTS --			
AMMONIA (NH3 AS N)			<0.1
NITRATE + NITRITE AS N			<0.05
-- METALS & MINOR CONSTITUENTS --			
ARSENIC (AS) DIS			<0.005
BARIUM (BA) DIS			<0.1
CADMIUM (CD) DIS			<0.001
CHROMIUM (CR) DIS			<0.02
IRON (FE) DIS			<0.03
LEAD (PB) DIS			<0.01
MANGANESE (MN) DIS			<0.02
MERCURY (HG) DIS			<0.001
SELENIUM (SE) DIS			<0.005
SILVER (AG) DIS			<0.005
-- VOLATILE ORGANICS --			
1,1,1,2-TETRACHLOROETHANE	<0.001	<0.001	
1,1,1-TRICHLOROETHANE	<0.0005	<0.0005	0.00057
1,1,2,2-TETRACHLOROETHANE	<0.001	<0.001	<0.001
1,1,2-TRICHLOROETHANE	<0.001	<0.001	<0.001
1,1-DICHLOROETHANE	<0.001	<0.001	<0.001
1,1-DICHLOROETHENE	<0.0005	<0.0005	<0.0005
1,1-DICHLOROPROPENE	<0.001	<0.001	
1,2-DIBROMOETHANE	<0.001	<0.001	
1,2-DICHLOROETHANE	<0.0005	<0.0005	<0.0005
1,2-DICHLOROPROPANE	<0.001	<0.001	
2,2-DICHLOROPROPANE	<0.001	<0.001	
2-CHLOROETHYL VINYL ETHER			<0.01
2-CHLOROTOLUENE	<0.001	<0.001	
4-BROMOFLUOROBENZENE			<0.01
4-CHLOROTOLUENE	<0.001	<0.001	
BENZENE	0.00073	<0.0005	<0.0005
BROMOBENZENE	<0.001	<0.001	
BROMOCHLOROMETHANE	<0.001	<0.001	<0.001
BROMODICHLOROMETHANE	<0.001	<0.001	<0.001
BROMOFORM	<0.001	<0.001	<0.001
BROMOMETHANE	<0.001	<0.001	<0.001
CARBON TETRACHLORIDE	<0.0005	<0.0005	<0.0005
CHLOROBENZENE	<0.001	<0.001	<0.001
CHLOROETHANE	<0.001	<0.001	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Quality Control

SITE CODE	BLANK	BLANK	BLANK
SAMPLE DATE	11/11/89	05/07/90	01/22/92
SAMPLE TIME	19:00	09:15	08:30
LAB	EL	EL	EL
LAB NUMBER	89-20184	90-10832	92-4685
SAMPLE NUMBER	HL-8911-005	HL-9005-115	HL-9201-102
-- VOLATILE ORGANICS --			
CHLOROFORM	<0.001	<0.001	<0.001
CHLOROMETHANE	<0.001	<0.001	<0.001
CIS-1,2-DICHLOROETHENE	<0.001	<0.001	
CIS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001
DIBROMOCHLOROMETHANE	<0.001	<0.001	<0.001
DIBROMOMETHANE	<0.001	<0.001	<0.001
DICHLORODIFLUOROMETHANE	<0.001	<0.001	<0.001
ETHYL METHACRYLATE			<0.01
ETHYLBENZENE	<0.001	<0.001	<0.001
IODOMETHANE			<0.01
TOTAL XYLENE			<0.001
M-XYLENE	<0.001	<0.001	
O-XYLENE	<0.001	<0.001	
P-XYLENE	<0.001	<0.001	
METHYLENE CHLORIDE	<0.001	<0.001	<0.001
STYRENE	<0.001	<0.001	<0.001
TETRACHLOROETHENE	<0.0005	<0.0005	<0.0005
TOLUENE	0.001	<0.001	0.001
TRANS-1,2-DICHLOROETHENE	<0.001	<0.001	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001
TRICHLOROETHENE	<0.0005	<0.0005	<0.0005
TRICHLOROFLUOROMETHANE	<0.001	<0.001	<0.001
VINYL ACETATE			<0.01
VINYL CHLORIDE	<0.0005	<0.0005	<0.0005
-- SEMI-VOLATILE EXTRACTABLES --			
1,2,3-TRICHLOROBENZENE	<0.001	<0.001	
1,2,3-TRICHLOROPROPANE	<0.001	<0.001	<0.001
1,2,4-TRICHLOROBENZENE	<0.001	<0.001	
1,2,4-TRIMETHYLBENZENE	<0.001	<0.001	
1,2-DIBROMO-3-CHLOROPROPANE	<0.001	<0.001	
1,2-DICHLOROBENZENE	<0.001	<0.001	
1,3,5-TRIMETHYLBENZENE	<0.001	<0.001	
1,3-DICHLOROBENZENE	<0.001	<0.001	
1,3-DICHLOROPROPANE	<0.001	<0.001	
1,4-DICHLOROBENZENE	<0.0005	<0.0005	
1,4-DIFLUOROBENZENE			<0.01
DICHLOROMONOFLUOROMETHANE		<0.001	
HEXACHLOROBUTADIENE	<0.001	<0.001	
ISOPROPYLBENZENE	<0.001	<0.001	
N-BUTYLBENZENE	<0.001	<0.001	
N-PROPYLBENZENE	<0.001	<0.001	
NAPHTHALENE	<0.001	<0.001	
P-ISOPROPYLTOLUENE	<0.001	<0.001	
SEC-BUTYLBENZENE	<0.001	<0.001	
TERT-BUTYLBENZENE	<0.001	<0.001	
-- OTHER PARAMETERS --			
CYANIDE (CN) TOT			<0.005
CHEMICAL OXYGEN DEMAND			<1.0

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Quality Control

SITE CODE	D.I. BLANK	D.I. BLANK	D.I. BLANK	D.I. BLANK	D.I. BLANK
SAMPLE DATE	05/22/93	12/15/93	04/07/94	08/25/94	11/18/94
SAMPLE TIME	18:00	13:00	17:20	11:00	12:45
LAB	EL	EL	EL	EL	EL
LAB NUMBER	93-20281	93-59624	94-13580	94-40383	94-58164
REMARKS	RINSEBLANK	BLANK		BLANK	BLANK
SAMPLE NUMBER	HL-9305-111	HL-9312-107	HL-9404-109	HL-9408-107	HL-9411-115
-- PHYSICAL PARAMETERS --					
PH	5.4	4.3			5.8
SC (UMHOS/CM AT 25 C)	2.0	2.0			1.0
TDS (MEASURED AT 180 C)	5.0				
TOTAL SUSPENDED SOLIDS	12.0				
-- MAJOR CONSTITUENTS --					
CALCIUM (CA) DIS	<1.0				
MAGNESIUM (MG) DIS	<1.0				
SODIUM (NA) DIS	<1.0				
POTASSIUM (K) DIS	<1.0				
TOTAL ALKALINITY AS CACO3	2.0				
BICARBONATE (HCO3)	2.0				
CARBONATE AS CO3	0.0				
SULFATE (SO4)	<1.0	<1.0			<1.0
CHLORIDE (CL)	<1.0	<1.0			<1.0
-- NUTRIENTS --					
AMMONIA (NH3 AS N)	<0.1				
NITRATE (NO3-N)	<0.05	<0.05			
NITRATE + NITRITE AS N					<0.05
-- METALS & MINOR CONSTITUENTS --					
ANTIMONY (SB) DIS		<0.05	<0.05		<0.05
ARSENIC (AS) DIS	<0.005	<0.005	<0.005		<0.005
BARIUM (BA) DIS	<0.1	<0.1	<0.1		<0.1
BERYLLIUM (BE) DIS		<0.001	<0.001		<0.001
CADMIUM (CD) DIS	<0.001	<0.001	<0.001		<0.001
CHROMIUM (CR) DIS	<0.01	<0.01	<0.01		<0.01
COBALT (CO) DIS		<0.01	<0.01		<0.01
COPPER (CU) DIS		<0.01	<0.01		<0.01
IRON (FE) DIS	<0.03	<0.03			<0.03
LEAD (PB) DIS	<0.01	<0.01	<0.01		<0.01
MANGANESE (MN) DIS	<0.01				
MERCURY (HG) DIS	<0.001	<0.001	<0.001		<0.001
NICKEL (NI) DIS		<0.01	<0.01		<0.01
SELENIUM (SE) DIS	<0.005	<0.005	<0.005		<0.005
SILVER (AG) DIS	<0.005	<0.005	<0.005		<0.005
THALLIUM (TL) DIS		<0.1	<0.1		<0.1
TIN (SN) DIS			<0.1		
VANADIUM (V) DIS		<0.1	<0.1		<0.1
ZINC (ZN) DIS		<0.01	0.02		<0.01
-- VOLATILE ORGANICS --					
ACETONITRILE METHYLCYANIDE			<0.02		
ALLYLCHLORIDE 3-CHLORO-1-PROPENE			<0.001		
1,1,1,2-TETRACHLOROETHANE		<0.001	<0.001	<0.001	<0.001
1,1,1-TRICHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,2,2-TETRACHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,2-TRICHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-DICHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-DICHLOROETHENE	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-DICHLOROPROPENE			<0.001		
1,2-DIBROMOETHANE		<0.001	<0.001	<0.001	<0.001
1,2-DICHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-DICHLOROPROPANE		<0.001	<0.001	<0.001	<0.001

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Quality Control

SITE CODE	D.I. BLANK	D.I. BLANK	D.I. BLANK	D.I. BLANK	D.I. BLANK
SAMPLE DATE	05/22/93	12/15/93	04/07/94	08/25/94	11/18/94
SAMPLE TIME	18:00	13:00	17:20	11:00	12:45
LAB	EL	EL	EL	EL	EL
LAB NUMBER	93-20281	93-59624	94-13580	94-40383	94-58164
REMARKS	RINSEBLANK	BLANK		BLANK	BLANK
SAMPLE NUMBER	HL-9305-111	HL-9312-107	HL-9404-109	HL-9408-107	HL-9411-115
-- VOLATILE ORGANICS --					
2,2-DICHLOROPROPANE			<0.001		
2-CHLOROETHYL VINYL ETHER	<0.001				
2-HEXANONE		<0.02	<0.02	<0.02	<0.02
4-BROMOFLUOROBENZENE	<0.01				
ACETONE		<0.02	<0.05	<0.05	<0.05
ACROLEIN			<0.02		
ACRYLONITRILE		<0.02	<0.02	<0.02	<0.02
BENZENE	<0.001	<0.001	<0.001	<0.001	<0.001
BROMOCHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001
BROMODICHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001
BROMOFORM	<0.001	<0.001	<0.001	<0.001	<0.001
BROMOMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001
CARBON DISULFIDE		<0.001	<0.001	<0.001	<0.001
CARBON TETRACHLORIDE	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROBENZENE	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROFORM	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROPRENE 2-CHLORO-1,3-BUTADIENE			<0.001		
CIS-1,2-DICHLOROETHENE		<0.001	<0.001	<0.001	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001	<0.001	<0.001
DIBROMOCHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001
DIBROMOMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001
DICHLORODIFLUOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001
ETHYL METHACRYLATE	<0.001		<0.001		
ETHYLBENZENE	<0.001	<0.001	<0.001	<0.001	<0.001
IODOMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001
ISOBUTANOL			<0.05		
TOTAL XYLENE	<0.001				
M-P XYLENE		<0.001			
O-XYLENE		<0.001	<0.001	<0.001	<0.001
METHACRYLONITRILE			<0.02		
METHYL ETHYL KETONE			<0.02	<0.02	
METHYL ETHYL KETONE		<0.02			<0.02
METHYL ISOBUTL KETONE		<0.02	<0.02	<0.02	<0.02
METHYL METHACRYLATE			<0.002		
METHYLENE CHLORIDE	<0.001	<0.001	<0.001	<0.001	<0.001
PROPIONITRILE ETHYLCYANIDE			<0.02		
STYRENE	<0.001	<0.001	<0.001	<0.001	<0.001
TETRACHLOROETHENE	<0.001	<0.001	<0.001	<0.001	<0.001
TOLUENE	<0.001	<0.001	<0.001	<0.001	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001	<0.001	<0.001	<0.001	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001	<0.001	<0.001
TRICHLOROETHENE	<0.001	<0.001	<0.001	<0.001	<0.001
TRICHLOROFLUOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001
VINYL ACETATE	<0.001	<0.001	<0.001	<0.001	<0.001
VINYL CHLORIDE	<0.001	<0.001	<0.001	<0.001	<0.001
PICLORAM			<0.0005		
-- SEMI-VOLATILE EXTRACTABLES --					
ALPHA-CHLORDANE			<0.00005		
1,4-BENZENEDIAMINE			ND		
CHLOROBENZILATE			<0.01		
1,2,3-TRICHLOROPROPANE	<0.001	<0.001	<0.001	<0.001	<0.001
1,2,4,5-TETRACHLOROBENZENE			<0.01		
1,2,4-TRICHLOROBENZENE			<0.001		

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TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

Sample Type: Quality Control

SITE CODE	D.I. BLANK	D.I. BLANK	D.I. BLANK	D.I. BLANK	D.I. BLANK
SAMPLE DATE	05/22/93	12/15/93	04/07/94	08/25/94	11/18/94
SAMPLE TIME	18:00	13:00	17:20	11:00	12:45
LAB	EL	EL	EL	EL	EL
LAB NUMBER	93-20281	93-59624	94-13580	94-40383	94-58164
REMARKS	RINSEBLANK	BLANK		BLANK	BLANK
SAMPLE NUMBER	HL-9305-111	HL-9312-107	HL-9404-109	HL-9408-107	HL-9411-115
-- SEMI-VOLATILE EXTRACTABLES --					
1,2-DIBROMO-3-CHLOROPROPANE		<0.001	<0.001	<0.001	<0.001
1,2-DICHLOROBENZENE		<0.001	<0.001	<0.001	<0.001
1,3,5-TRINITROBENZENE			<0.01		
1,3-DICHLOROBENZENE			<0.001		
1,3-DICHLOROPROPANE			<0.001		
1,3-DINITROBENZENE			<0.01		
TRANS-1,4-DICHLORO-2-BUTENE		<0.002		<0.002	<0.002
1,4-DICHLORO-2-BUTENE			<0.002		
1,4-DICHLOROBENZENE		<0.001	<0.001	<0.001	<0.001
1,4-DIFLUOROBENZENE	<0.001				
METHAPYRILENE			ND		
1-METHYLNAPHTHALENE			<0.01		
1-NAPHTHYLAMINE			<0.01		
2,3,4,6-TETRACHLOROPHENOL			<0.01		
2,4,5-TRICHLOROPHENOL			<0.01		
2,4,6-TRICHLOROPHENOL			<0.01		
2,4-DICHLOROPHENOL			<0.01		
2,4-DIMETHYLPHENOL			<0.01		
2,4-DINITROPHENOL			<0.05		
2,4-DINITROTOLUENE			<0.01		
2,6-DICHLOROPHENOL			<0.01		
2,6-DINITROTOLUENE			<0.01		
2-CHLORONAPHTHALENE			<0.01		
2-CHLOROPHENOL			<0.01		
2-METHYLNAPHTHALENE			<0.01		
2-METHYLPHENOL (O-CRESOL)			<0.01		
2-NAPHTHYLAMINE			<0.01		
2-NITROANILINE			<0.01		
2-NITROPHENOL			<0.01		
2-PICOLINE			<0.01		
3,3-DICHLOROBENZIDINE			<0.02		
3-METHYLCHOLANTHRENE			<0.1		
3-NITROANILINE			<0.01		
4,6-DINITRO-2-METHYLPHENOL			<0.05		
4-AMINOBIPHENYL			<0.01		
4-BROMOPHENYL PHENYL ETHER			<0.01		
4-CHLORO-3-METHYLPHENOL			<0.01		
4-CHLORO-2-METHYLPHENOL			<0.01		
4-CHLOROPHENOL			<0.01		
4-CHLOROPHENYL PHENYL ETHER			<0.01		
4-METHYLPHENOL/3-METHYLPHENOL			<0.01		
4-NITROANILINE			<0.01		
4-NITROPHENOL			<0.0005		
7,12-DIMETHYLBENZENE (A) ANTHRACENE			<0.01		
A,A-DIMETHYLPHENETHYLAMINE			ND		
ACENAPHTHENE			<0.01		
ACENAPHTHYLENE			<0.01		
ACETOPHENONE			<0.01		
ANILINE			<0.01		
ANTHRACENE			<0.01		
ARAMITE			<0.01		
1,2-DIPHENYLHYDRAZINE (AZOBENZENE)			<0.01		
BENZIDINE			<0.02		
BENZO (A) ANTHRACENE			<0.01		
BENZO (A) PYRENE			<0.01		
BENZO (B) FLUORANTHENE			<0.01		

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Sample Type: Quality Control

SITE CODE	D.I. BLANK	D.I. BLANK	D.I. BLANK	D.I. BLANK	D.I. BLANK
SAMPLE DATE	05/22/93	12/15/93	04/07/94	08/25/94	11/18/94
SAMPLE TIME	18:00	13:00	17:20	11:00	12:45
LAB	EL	EL	EL	EL	EL
LAB NUMBER	93-20281	93-59624	94-13580	94-40383	94-58164
REMARKS	RINSEBLANK	BLANK		BLANK	BLANK
SAMPLE NUMBER	HL-9305-111	HL-9312-107	HL-9404-109	HL-9408-107	HL-9411-115
-- SEMI-VOLATILE EXTRACTABLES --					
BENZO (GHI) PERYLENE			<0.01		
BENZO (K) FLUORANTHENE			<0.01		
BENZYL ALCOHOL			<0.01		
BIS (2-CHLOROETHOXY) METHANE			<0.01		
BIS (2-CHLOROETHYL) ETHER			<0.01		
BIS (2-CHLOROISOPROPYL) ETHER			<0.01		
BIS (2-ETHYLHEXYL) PHTHALATE			<0.01		
BUTYL BENZYL PHTHALATE			<0.01		
CHRYSENE			<0.01		
DI-N-BUTYLPHTHALATE			<0.01		
DI-N-OCTYLPHTHALATE			<0.01		
DIBENZO (A,H) ANTHRACENE			<0.01		
DIBENZOFURAN			<0.01		
DIETHYLPHTHALATE			<0.01		
3,3'-DIMETHYLBENZIDINE			<0.01		
DIMETHYLPHTHALATE			<0.01		
DINOSEB			<0.001		
DIPHENYLAMINE			<0.01		
ETHYL METHANESULFONATE			<0.01		
FAMPHUR			<0.01		
FLUORANTHENE			<0.01		
FLUORENE			<0.01		
2-ACETYL AMINO FLUORENE			<0.01		
HEXACHLOROBENZENE			<0.01		
HEXACHLOROBUTADIENE			<0.001		
HEXACHLOROCYCLOPENTADIENE			<0.01		
HEXACHLOROETHANE			<0.01		
HEXACHLOROPHENE			ND		
HEXACHLOROPHROPENE			<0.01		
INDENO (1,2,3-CD) PYRENE			<0.01		
ISODRIN			<0.0001		
ISOPHORONE			<0.01		
KEPONE			<0.001		
ISOSAFROLE			<0.01		
METHYL METHANESULFONATE			<0.01		
5-NITRO-O-TOLUIDINE			<0.01		
N-NITROSO-DI-N-BUTYLAMINE			<0.01		
N-NITROSO-DI-N-PROPYLAMINE			<0.01		
N-NITROSODIMETHYLAMINE			<0.01		
N-NITROSODIPHENYLAMINE			<0.01		
N-NITROSOPIPERIDINE			<0.01		
N-NITROSODIETHYLAMINE			<0.01		
N-NITROSOPYRROLIDINE			<0.01		
O-TOLUIDINE			<0.01		
N-NITROSOMORPHOLINE			<0.01		
N-NITROSOMETHYLETHYLAMINE			<0.01		
NAPHTHALENE		<0.001	<0.001		
NITROBENZENE			<0.01		
4-NITROQUINOLINE-N-OXIDE			<0.1		
P-CHLOROTOLUENE			<0.01		
P-CHLOROANILINE			<0.01		
P-DIMETHYLAMINOAZOBENZENE			<0.01		
1,4-NAPHTHOQUINONE			<0.1		
PARATHION			<0.01		
PENTACHLOROBENZENE			<0.01		
PENTACHLORONITROBENZENE			<0.01		

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Sample Type: Quality Control

SITE CODE	D.I. BLANK	D.I. BLANK	D.I. BLANK	D.I. BLANK	D.I. BLANK
SAMPLE DATE	05/22/93	12/15/93	04/07/94	08/25/94	11/18/94
SAMPLE TIME	18:00	13:00	17:20	11:00	12:45
LAB	EL	EL	EL	EL	EL
LAB NUMBER	93-20281	93-59624	94-13580	94-40383	94-58164
REMARKS	RINSEBLANK	BLANK		BLANK	BLANK
SAMPLE NUMBER	HL-9305-111	HL-9312-107	HL-9404-109	HL-9408-107	HL-9411-115
-- SEMI-VOLATILE EXTRACTABLES --					
PENTACHLOROPHENOL			<0.00005		
PHENACETIN			<0.01		
PHENANTHRENE			<0.01		
PHENOL			<0.01		
O,O,O-TRIETHYLPHOSPHOROTHIOATE			<0.01		
PYRENE			<0.01		
PYRIDINE			<0.02		
SAFROLE			<0.01		
THIONAZIN			<0.01		
-- HYDROCARBONS --					
M+P-XYLENE			<0.001		
M+P-XYLENE				<0.001	<0.001
ACIFLOURFEN			<0.0005		
BENTAZON			<0.0025		
CHLORAMBEN			<0.0005		
DACTHAL			<0.001		
DALAPON			<0.01		
DICAMBA			<0.00025		
DICHLORPROP			<0.001		
AROCLOR 1016			<0.001		
AROCLOR 1221			<0.002		
AROCLOR 1232			<0.001		
AROCLOR 1242			<0.001		
AROCLOR 1248			<0.001		
AROCLOR 1254			<0.001		
AROCLOR 1260			<0.001		
AROCLOR 1262			<0.001		
AROCLOR 1268			<0.001		
2,4-D			<0.001		
2,4-DB			<0.0025		
DIALLATE (AVADEX)			<0.01		
3,5-DICHLOROBEZOIC ACID			<0.0005		
DIMETHOATE (CYGON)			<0.1		
DISULFOTON			<0.01		
MCPA			<0.2		
MCPP			<0.2		
METHYL PARATHION (PENNCAP-M)			<0.01		
PHORATE (THIMET)			<0.01		
SULFOTEP			<0.01		
2,4,5-T			<0.0002		
2,4,5-TP (SILVEX)			<0.0002		
-- OTHER PARAMETERS --					
4;4'-DDD			<0.0001		
4;4'-DDE			<0.0001		
4;4'-DDT			<0.0001		
ALDRIN			<0.00005		
ALPHA-BHC			<0.00005		
BETA-BHC			<0.00005		
GAMMA-CHLORDANE			<0.00005		
CYANIDE (CN) TOT	<0.005	<0.005	<0.005		<0.005
DELTA-BHC			<0.00005		
DIELDRIN			<0.0001		
ENDOSULFAN I			<0.00005		
ENDOSULFAN II			<0.0001		

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Sample Type: Quality Control

SITE CODE	D.I. BLANK	D.I. BLANK	D.I. BLANK	D.I. BLANK	D.I. BLANK
SAMPLE DATE	05/22/93	12/15/93	04/07/94	08/25/94	11/18/94
SAMPLE TIME	18:00	13:00	17:20	11:00	12:45
LAB	EL	EL	EL	EL	EL
LAB NUMBER	93-20281	93-59624	94-13580	94-40383	94-58164
REMARKS	RINSEBLANK	BLANK		BLANK	BLANK
SAMPLE NUMBER	HL-9305-111	HL-9312-107	HL-9404-109	HL-9408-107	HL-9411-115
-- OTHER PARAMETERS --					
ENDOSULFAN SULFATE			<0.0001		
ENDRIN			<0.0001		
ENDRIN ALDEHYDE			<0.0001		
ENDRIN KETONE			<0.0001		
GAMMA-BHC(LINDANE)			<0.00005		
HEPTACHLOR			<0.00005		
HEPTACHLOR EPOXIDE			<0.00005		
METHOXYCHLOR			<0.0005		
PRONAMIDE			<0.01		
SULFIDE AS S			<0.04		
CHEMICAL OXYGEN DEMAND	<1.0	<1.0			<1.0
TOXAPHENE			<0.005		

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Sample Type: Quality Control

SITE CODE	RINSBLANK	RINSBLANK	RINSBLANK	RINSBLANK	RINSBLANK	RINSBLANK
SAMPLE DATE	05/19/92	11/16/92	12/15/93	12/16/93	08/24/94	11/18/94
SAMPLE TIME	14:00	15:35	15:15	09:10	14:30	13:40
LAB	EL	EL	EL	EL	EL	EL
LAB NUMBER	92-19271	92-49144	93-59625	93-59627	94-40105	94-58165
REMARKS		BLANK	BLANK	BLANK	BLANK	BLANK
SAMPLE NUMBER	HL-9205-107	HL-9211-103	HL-9312-108	HL-9312-109	HL-9408-115	HL-9411-116
-- PHYSICAL PARAMETERS --						
PH	6.5	5.6	5.9	5.8		5.8
SC (UMHOS/CM AT 25 C)	11.0	2.0	2.0	3.0		1.0
TDS (MEASURED AT 180 C)	<1.0	3.0				
TOTAL SUSPENDED SOLIDS	<1.0	<1.0				
-- MAJOR CONSTITUENTS --						
CALCIUM (CA) DIS	<1.0	<1.0				
MAGNESIUM (MG) DIS	<1.0	<1.0				
SODIUM (NA) DIS	<1.0	<1.0				
POTASSIUM (K) DIS	<1.0	<1.0				
TOTAL ALKALINITY AS CACO3	5.0	1.0				
BICARBONATE (HCO3)	6.0	2.0				
CARBONATE AS CO3	0.0	0.0				
SULFATE (SO4)	<1.0	<1.0	<1.0	<1.0		<1.0
CHLORIDE (CL)	<1.0	<1.0	<1.0	<1.0		<1.0
-- NUTRIENTS --						
AMMONIA (NH3 AS N)	<0.1	<0.1				
NITRATE (NO3-N)	<0.05	<0.05	<0.05	<0.05		
NITRATE + NITRITE AS N						<0.05
-- METALS & MINOR CONSTITUENTS --						
ANTIMONY (SB) DIS			<0.05	<0.05		<0.05
ARSENIC (AS) DIS	<0.005	<0.005	<0.005	<0.005		<0.005
BARIUM (BA) DIS	<0.1	<0.1	<0.1	<0.1		<0.1
BERYLLIUM (BE) DIS			<0.001	<0.001		<0.001
CADMIUM (CD) DIS	<0.001	<0.001	<0.001	<0.001		<0.001
CHROMIUM (CR) DIS	<0.01	<0.01	<0.01	<0.01		<0.01
COBALT (CO) DIS			<0.01	<0.01		<0.01
COPPER (CU) DIS			<0.01	<0.01		<0.01
IRON (FE) DIS	<0.03	<0.03	<0.03	<0.03		<0.03
LEAD (PB) DIS	<0.01	<0.01	<0.01	<0.01		<0.01
MANGANESE (MN) DIS	<0.02	<0.02				
MERCURY (HG) DIS	<0.001	<0.001	<0.001	<0.001		<0.001
NICKEL (NI) DIS			<0.01	<0.01		<0.01
SELENIUM (SE) DIS	<0.005	<0.005	<0.005	<0.005		<0.005
SILVER (AG) DIS	<0.005	<0.005	<0.005	<0.005		<0.005
THALLIUM (TL) DIS			<0.1	<0.1		<0.1
VANADIUM (V) DIS			<0.1	<0.1		<0.1
ZINC (ZN) DIS			0.01	0.01		<0.01
-- VOLATILE ORGANICS --						
1,1,1,2-TETRACHLOROETHANE			<0.001	<0.001	<0.001	<0.001
1,1,1-TRICHLOROETHANE	0.00054	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,2,2-TETRACHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,2-TRICHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-DICHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-DICHLOROETHENE	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-DIBROMOETHANE			<0.001	<0.001	<0.001	<0.001
1,2-DICHLOROETHANE	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-DICHLOROPROPANE			<0.001	<0.001	<0.001	<0.001
2-CHLOROETHYL VINYL ETHER	<0.01	<0.001				
2-HEXANONE			<0.02	<0.02	<0.02	<0.02
4-BROMOFLUOROBENZENE	<0.01	<0.01				
ACETONE			<0.02	<0.02	<0.05	<0.05
ACRYLONITRILE			<0.02	<0.02	<0.02	<0.02

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Sample Type: Quality Control

SITE CODE	RINSBLANK	RINSBLANK	RINSBLANK	RINSBLANK	RINSBLANK	RINSBLANK
SAMPLE DATE	05/19/92	11/16/92	12/15/93	12/16/93	08/24/94	11/18/94
SAMPLE TIME	14:00	15:35	15:15	09:10	14:30	13:40
LAB	EL	EL	EL	EL	EL	EL
LAB NUMBER	92-19271	92-49144	93-59625	93-59627	94-40105	94-58165
REMARKS		BLANK	BLANK	BLANK	BLANK	BLANK
SAMPLE NUMBER	HL-9205-107	HL-9211-103	HL-9312-108	HL-9312-109	HL-9408-115	HL-9411-116
-- VOLATILE ORGANICS --						
BENZENE	0.00058	<0.001	<0.001	<0.001	<0.001	<0.001
BROMOCHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMODICHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMOFORM	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BROMOMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CARBON DISULFIDE			<0.001	<0.001	<0.001	<0.001
CARBON TETRACHLORIDE	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROBENZENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROFORM	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CIS-1,2-DICHLOROETHENE			<0.001	<0.001	<0.001	<0.001
CIS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DIBROMOCHLOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DIBROMOMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DICHLORODIFLUOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
ETHYL METHACRYLATE	<0.01	<0.001				
ETHYLBENZENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
IODOMETHANE	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001
TOTAL XYLENE	<0.001	<0.001				
M-P XYLENE			<0.001	<0.001		
O-XYLENE			<0.001	<0.001	<0.001	<0.001
METHYL ETHYL KETONE					<0.02	
METHYL ETHYL KETONE			<0.02	<0.02		<0.02
METHYL ISOBUTL KETONE			<0.02	<0.02	<0.02	<0.02
METHYLENE CHLORIDE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
STYRENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TETRACHLOROETHENE	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TOLUENE	0.0023	<0.001	<0.001	<0.001	<0.001	<0.001
TRANS-1,2-DICHLOROETHENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRANS-1,3-DICHLOROPROPENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TRICHLOROETHENE	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001
TRICHLOROFLUOROMETHANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
VINYL ACETATE	<0.01	<0.02	<0.001	<0.001	<0.001	<0.001
VINYL CHLORIDE	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001
-- SEMI-VOLATILE EXTRACTABLES --						
1,2,3-TRICHLOROPROPANE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-DIBROMO-3-CHLOROPROPANE			<0.001	<0.001	<0.001	<0.001
1,2-DICHLOROBENZENE			<0.001	<0.001	<0.001	<0.001
TRANS-1,4-DICHLORO-2-BUTENE			<0.002	<0.002	<0.002	<0.002
1,4-DICHLOROBENZENE			<0.001	<0.001	<0.001	<0.001
1,4-DIFLUOROBENZENE	<0.01	<0.001				
NAPHTHALENE			<0.001	<0.001		
-- HYDROCARBONS --						
M+P-XYLENE					<0.001	<0.001
-- OTHER PARAMETERS --						
CYANIDE (CN) TOT	<0.005	<0.005	<0.005	<0.005		<0.005
CHEMICAL OXYGEN DEMAND	10.0	<1.0	<1.0	<1.0		3.0

NOTES: All results in mg/L (Water) or mg/kg (Soil) unless noted and are laboratory (LAB) unless field (FLD) or calculated (CALC)
TOT:Total; DIS:Dissolved; TRC:Total Recoverable; E:Estimated; A:Anomalous Data; <:Less Than Detect. Blank indicates parameter not tested.

APPENDIX A: WATER QUALITY ANALYSES SUMMARY REPORT (1989 THROUGH 1994)

INDEX

Page	Site Code	Site Name	Site Type	Elevation MP	Well Depth
97	5	Colvin	Private Well		
99	9	9	Private Well		
101	13	Johnson/Oakwood	Private Well		
105	19	19	Private Well		
107	20	20	Private Well		
109	23	23	Private Well		
111	26	26	Private Well		
113	28	Johnson/Peosta	Private Well		
115	31	Gardner	Private Well		
118	32	32	Private Well		
120	34	34	Private Well		
122	36	36	Private Well		
124	38	38	Private Well		
126	40	Hartman	Private Well		
130	42	42	Private Well		
132	45	HANSEN (OAKWOOD)	Private Well		
134	47	47	Private Well		
135	48	48	Private Well		
137	51	Hartze	Private Well		
139	52	52	Private Well		
141	57	Gwen Francis	Private Well		
142	59	Stolp	Private Well		
145	62	Elton Hartze	Private Well		
146	67	67	Private Well		
148	68	68	Private Well		
149	75	Creach	Private Well		
9	82-2	82-2	Monitoring Wells		24.0
11	82-3	82-3	Monitoring Wells		87
12	82-4	82-4	Monitoring Wells		79.0
15	83-5	83-5	Monitoring Wells		
16	83-6	83-6	Monitoring Wells	3990.86	23.0
24	83-7	83-7	Monitoring Wells		40.0
151	84	SPENCER	Private Well		
153	87	Peterson	Private Well		
154	92	Ray Rowsey	Private Well		
155	93	R.A. HECHT - 932 ASPEN	Private Well		
156	96	ED MCHUGH (#2 PUMP HOUSE SW OF MCHUGH TRAILER CRT	Private Well		
157	BLANK	BLANK	Quality Control		
159	D.I. BLANK	D.I. BLANK	Quality Control		
26	EPA-1	EPA-1	Monitoring Wells	3986.00	59
34	FAIR GRND	FAIRGROUND-CITY WATER	Monitoring Wells		
36	HL-1	HL-1	Monitoring Wells		20.0
38	HL-2	HL-2	Monitoring Wells		30
39	HL-3	HL-3	Monitoring Wells		
40	HL-5	HL-5	Monitoring Wells		31.44
42	HL-6	HL-6	Monitoring Wells		
44	HL-7	HL-7	Monitoring Wells		18.0
46	HL-90-1	HL-90-1	Monitoring Wells	3942.48	68.0
56	HL-90-2	HL-90-2	Monitoring Wells	3950.96	68
68	HL-90-3	HL-90-3	Monitoring Wells	3958.29	79
76	HL-94-1	HL-94-1	Monitoring Wells		
81	HL-94-2	HL-94-2	Monitoring Wells		
86	HL-94-3	HL-94-3	Monitoring Wells		
1	I-1	HL-I1	Irrigation Well		
3	I-2	HL-I2	Irrigation Well		
5	I-3	GOLF COURSE WELL #3	Irrigation Well		
7	INF.GALLERY	HL-IF1	Irrigation Well		
88	MPC-HL-1	MPC-HL-1	Monitoring Wells		
94	MPC-HL-2	MPC-HL-2	Monitoring Wells		
165	RINSBLANK	RINSATE BLANK	Quality Control		

APPENDIX A: WATER QUALITY ANALYSES SUMMARY REPORT (1989 THROUGH 1994)

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SAMPLE NUMBER ORDER				
Page	Sample Number	Lab ##	Date	Site Code
135	HL-0690-200	90-14925	06/01/90	48
137	HL-0690-201	90-14926	06/01/90	51
142	HL-0690-202	90-14927	06/01/90	59
146	HL-0690-203	90-14928	06/01/90	67
146	HL-0690-204	90-14929	06/01/90	67
113	HL-1	93-21821	05/25/93	28
137	HL-1	94-16462	04/18/94	51
126	HL-10	93-21829	05/28/93	40
126	HL-10	94-16471	04/18/94	40
149	HL-104C4	94-3396	01/04/94	75
139	HL-104E5	94-3393	01/04/94	52
115	HL-104G6	94-3395	01/04/94	31
126	HL-104H2	94-3391	01/04/94	40
103	HL-104J1	94-3392	01/04/94	13
142	HL-104S3	94-3394	01/04/94	59
97	HL-105C1	94-3538	01/05/94	5
115	HL-11	93-21830	05/28/93	31
103	HL-2	94-16463	04/18/94	13
132	HL-3	94-16464	04/18/94	45
139	HL-3	93-21822	05/26/93	52
139	HL-4	93-21823	05/26/93	52
144	HL-4	94-16465	04/18/94	59
142	HL-5	93-21824	05/26/93	59
149	HL-5	94-16466	04/18/94	75
101	HL-6	93-21825	05/26/93	13
117	HL-6	94-16467	04/18/94	31
113	HL-7	94-16468	04/18/94	28
149	HL-7	93-21826	05/26/93	75
97	HL-8	93-21827	11/11/93	5
151	HL-8	94-16469	04/18/94	84
12	HL-8911-001	89-20180	11/11/89	82-4
9	HL-8911-002	89-20181	11/11/89	82-2
44	HL-8911-003	89-20182	11/11/89	HL-7
24	HL-8911-004	89-20183	11/11/89	83-7
157	HL-8911-005	89-20184	11/11/89	BLANK
36	HL-8911-006	89-20185	11/13/89	HL-1
16	HL-8911-900		11/13/89	83-6
15	HL-8911-901		11/13/89	83-5
38	HL-8911-902		11/13/89	HL-2
39	HL-8911-903		11/13/89	HL-3
11	HL-8911-904		11/13/89	82-3
40	HL-8911-905		11/13/89	HL-5
97	HL-9	94-16470	04/18/94	5
153	HL-9	93-21828	05/28/93	87
101	HL-90-10	90-3298	02/16/90	13
68	HL-90-2-100	90-2765	02/02/90	HL-90-3
111	HL-9005-100	90-10817	05/03/90	26
118	HL-9005-101	90-10818	05/03/90	32
130	HL-9005-102	90-10819	05/03/90	42
115	HL-9005-103	90-10820	05/03/90	31
124	HL-9005-104	90-10821	05/03/90	38
101	HL-9005-105	90-10822	05/04/90	13
105	HL-9005-106	90-10823	05/04/90	19
120	HL-9005-107	90-10824	05/06/90	34
107	HL-9005-108	90-10825	05/06/90	20
109	HL-9005-109	90-10826	05/06/90	23
36	HL-9005-110	90-10827	05/06/90	HL-1
40	HL-9005-112	90-10829	05/06/90	HL-5
42	HL-9005-113	90-10830	05/06/90	HL-6
126	HL-9005-114	90-10831	05/06/90	40
157	HL-9005-115	90-10832	05/07/90	BLANK
5	HL-9005-116	90-12196	05/08/90	I-3
56	HL-9005-120	90-12197	05/10/90	HL-90-2
46	HL-9005-121	90-12198	05/11/90	HL-90-1
12	HL-9005-122	90-12199	05/11/90	82-4
124	HL-9005-204	90-10833	05/03/90	38
113	HL-9006-100	90-15038	06/05/90	28
34	HL-9006-101	90-15039	06/05/90	FAIR GRND
122	HL-9006-102	90-15040	06/05/90	36

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11		HL-8911-904	11/13/89	82-3
15		HL-8911-901	11/13/89	83-5
16		HL-8911-900	11/13/89	83-6
38		HL-8911-902	11/13/89	HL-2
39		HL-8911-903	11/13/89	HL-3
40		HL-8911-905	11/13/89	HL-5
94		HL-9211-107	11/19/92	MPC-HL-2
151		HL-9408-109	08/25/94	84
3		HL-9411-110	11/21/94	I-2
5		HL-9411-111	11/21/94	I-3
24		HL-9411-101	11/21/94	83-7
128		HL-9412-102	12/08/94	40
149		HL-9412-106	12/08/94	75
154		HL-9412-107	12/08/94	92
12	89-20180	HL-8911-001	11/11/89	82-4
9	89-20181	HL-8911-002	11/11/89	82-2
44	89-20182	HL-8911-003	11/11/89	HL-7
24	89-20183	HL-8911-004	11/11/89	83-7
157	89-20184	HL-8911-005	11/11/89	BLANK
36	89-20185	HL-8911-006	11/13/89	HL-1
111	90-10817	HL-9005-100	05/03/90	26
118	90-10818	HL-9005-101	05/03/90	32
130	90-10819	HL-9005-102	05/03/90	42
115	90-10820	HL-9005-103	05/03/90	31
124	90-10821	HL-9005-104	05/03/90	38
101	90-10822	HL-9005-105	05/04/90	13
105	90-10823	HL-9005-106	05/04/90	19
120	90-10824	HL-9005-107	05/06/90	34
107	90-10825	HL-9005-108	05/06/90	20
109	90-10826	HL-9005-109	05/06/90	23
36	90-10827	HL-9005-110	05/06/90	HL-1
40	90-10829	HL-9005-112	05/06/90	HL-5
42	90-10830	HL-9005-113	05/06/90	HL-6
126	90-10831	HL-9005-114	05/06/90	40
157	90-10832	HL-9005-115	05/07/90	BLANK
124	90-10833	HL-9005-204	05/03/90	38
5	90-12196	HL-9005-116	05/08/90	I-3
56	90-12197	HL-9005-120	05/10/90	HL-90-2
46	90-12198	HL-9005-121	05/11/90	HL-90-1
12	90-12199	HL-9005-122	05/11/90	82-4
135	90-14925	HL-0690-200	06/01/90	48
137	90-14926	HL-0690-201	06/01/90	51
142	90-14927	HL-0690-202	06/01/90	59
146	90-14928	HL-0690-203	06/01/90	67
146	90-14929	HL-0690-204	06/01/90	67
113	90-15038	HL-9006-100	06/05/90	28
34	90-15039	HL-9006-101	06/05/90	FAIR GRND
122	90-15040	HL-9006-102	06/05/90	36
99	90-15042	HL-9006-104	06/06/90	9
151	90-15044	HL-9006-106	06/06/90	84
68	90-2765	HL-90-2-100	02/02/90	HL-90-3
46	90-2766	HL90-2-101	02/02/90	HL-90-1
56	90-2767	HL90-2-102	02/03/90	HL-90-2
101	90-3298	HL-90-10	02/16/90	13
101	91-12763	HL-9104-100	04/04/91	13
148	91-12764	HL-9104-101	04/04/91	68
139	91-12765	HL-9104-102	04/04/91	52
142	91-12766	HL-9104-103	04/04/91	59
56	91-12767	HL-9104-104	04/04/91	HL-90-2
26	91-12768	HL-9104-105	04/05/91	EPA-1
16	91-12769	HL-9104-106	04/05/91	83-6
68	91-12770	HL-9104-107	04/05/91	HL-90-3
46	91-12771	HL-9104-108	04/05/91	HL-90-1
46	91-12772	HL-9104-118	04/05/91	HL-90-1
126	91-13086	HL-9104-109	04/13/91	40
97	91-13087	HL-9104-110	04/13/91	5
115	91-13088	HL-9104-111	04/13/91	31
88	92-16654	MPC-9205-101	05/06/92	MPC-HL-1
94	92-16655	MPC-9205-102	05/06/92	MPC-HL-2

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151	HL-9006-106	90-15044	06/06/90	84
101	HL-9104-100	91-12763	04/04/91	13
148	HL-9104-101	91-12764	04/04/91	68
139	HL-9104-102	91-12765	04/04/91	52
142	HL-9104-103	91-12766	04/04/91	59
56	HL-9104-104	91-12767	04/04/91	HL-90-2
26	HL-9104-105	91-12768	04/05/91	EPA-1
16	HL-9104-106	91-12769	04/05/91	83-6
68	HL-9104-107	91-12770	04/05/91	HL-90-3
46	HL-9104-108	91-12771	04/05/91	HL-90-1
126	HL-9104-109	91-13086	04/13/91	40
97	HL-9104-110	91-13087	04/13/91	5
115	HL-9104-111	91-13088	04/13/91	31
46	HL-9104-118	91-12772	04/05/91	HL-90-1
68	HL-9201-100	92-4683	01/21/92	HL-90-3
46	HL-9201-101	92-4684	01/21/92	HL-90-1
157	HL-9201-102	92-4685	01/22/92	BLANK
26	HL-9201-103	92-4687	01/22/92	EPA-1
56	HL-9201-104	92-4686	01/22/92	HL-90-2
142	HL-9201-105	92-4688	01/22/92	59
134	HL-9201-106	92-4689	01/22/92	47
149	HL-9201-107	92-4690	01/22/92	75
124	HL-9201-108	92-4691	01/22/92	38
101	HL-9201-109	92-4692	01/22/92	13
115	HL-9201-110	92-5002	01/29/92	31
16	HL-9201-111	92-5001	01/31/92	83-6
149	HL-9205-100	92-19278	05/20/92	75
56	HL-9205-101	92-19272	05/19/92	HL-90-2
142	HL-9205-102	92-19277	05/20/92	59
16	HL-9205-103	92-19274	05/19/92	83-6
101	HL-9205-105	92-19276	05/20/92	13
165	HL-9205-107	92-19271	05/19/92	RINSBLANK
68	HL-9205-109	92-19269	05/19/92	HL-90-3
135	HL-9205-110	92-19279	05/20/92	48
115	HL-9205-112	92-19788	05/28/92	31
139	HL-9205-114	92-19789	05/28/92	52
126	HL-9205-118	92-19787	05/28/92	40
56	HL-9205-119	92-19273	05/19/92	HL-90-2
46	HL-9205-122	92-19270	05/19/92	HL-90-1
26	HL-9205-123	92-19275	05/20/92	EPA-1
16	HL-9211-100	92-49141	11/16/92	83-6
68	HL-9211-101	92-49142	11/16/92	HL-90-3
46	HL-9211-102	92-49143	11/16/92	HL-90-1
165	HL-9211-103	92-49144	11/16/92	RINSBLANK
56	HL-9211-104	92-49145	11/16/92	HL-90-2
60	HL-9211-105	92-49146	11/16/92	HL-90-2
26	HL-9211-106	92-49147	11/17/92	EPA-1
94	HL-9211-107		11/19/92	MPC-HL-2
88	HL-9211-108	92-49148	11/19/92	MPC-HL-1
139	HL-9212-900	92-50581	12/01/92	52
139	HL-9212-901	92-50582	12/01/92	52
142	HL-9212-902	92-50583	12/01/92	59
101	HL-9212-903	92-50584	12/01/92	13
149	HL-9212-904	92-50585	12/01/92	75
126	HL-9212-905	92-50586	12/02/92	40
97	HL-9212-906	92-50587	12/02/92	5
115	HL-9212-907	92-50588	12/02/92	31
16	HL-9305-100	93-20284	05/22/93	83-6
26	HL-9305-101	93-20448	05/25/93	EPA-1
50	HL-9305-102	93-20280	05/22/93	HL-90-1
60	HL-9305-103	93-20279	05/22/93	HL-90-2
68	HL-9305-104	93-20283	05/22/93	HL-90-3
88	HL-9305-105	93-20450	05/27/93	MPC-HL-1
94	HL-9305-106	93-20449	05/27/93	MPC-HL-2
159	HL-9305-111	93-20281	05/22/93	D.I. BLANK
50	HL-9305-112	93-20282	05/22/93	HL-90-1
16	HL-9312-100	93-59620	12/15/93	83-6
26	HL-9312-101	93-59621	12/15/93	EPA-1

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46	92-19270	HL-9205-122	05/19/92	HL-90-1
165	92-19271	HL-9205-107	05/19/92	RINSBLANK
56	92-19272	HL-9205-101	05/19/92	HL-90-2
56	92-19273	HL-9205-119	05/19/92	HL-90-2
16	92-19274	HL-9205-103	05/19/92	83-6
26	92-19275	HL-9205-123	05/20/92	EPA-1
101	92-19276	HL-9205-105	05/20/92	13
142	92-19277	HL-9205-102	05/20/92	59
149	92-19278	HL-9205-100	05/20/92	75
135	92-19279	HL-9205-110	05/20/92	48
126	92-19787	HL-9205-118	05/28/92	40
115	92-19788	HL-9205-112	05/28/92	31
139	92-19789	HL-9205-114	05/28/92	52
68	92-4683	HL-9201-100	01/21/92	HL-90-3
46	92-4684	HL-9201-101	01/21/92	HL-90-1
157	92-4685	HL-9201-102	01/22/92	BLANK
56	92-4686	HL-9201-104	01/22/92	HL-90-2
26	92-4687	HL-9201-103	01/22/92	EPA-1
142	92-4688	HL-9201-105	01/22/92	59
134	92-4689	HL-9201-106	01/22/92	47
149	92-4690	HL-9201-107	01/22/92	75
124	92-4691	HL-9201-108	01/22/92	38
101	92-4692	HL-9201-109	01/22/92	13
16	92-49141	HL-9211-100	11/16/92	83-6
68	92-49142	HL-9211-101	11/16/92	HL-90-3
46	92-49143	HL-9211-102	11/16/92	HL-90-1
165	92-49144	HL-9211-103	11/16/92	RINSBLANK
56	92-49145	HL-9211-104	11/16/92	HL-90-2
60	92-49146	HL-9211-105	11/16/92	HL-90-2
26	92-49147	HL-9211-106	11/17/92	EPA-1
88	92-49148	HL-9211-108	11/19/92	MPC-HL-1
16	92-5001	HL-9201-111	01/31/92	83-6
115	92-5002	HL-9201-110	01/29/92	31
139	92-50581	HL-9212-900	12/01/92	52
139	92-50582	HL-9212-901	12/01/92	52
142	92-50583	HL-9212-902	12/01/92	59
101	92-50584	HL-9212-903	12/01/92	13
149	92-50585	HL-9212-904	12/01/92	75
126	92-50586	HL-9212-905	12/02/92	40
97	92-50587	HL-9212-906	12/02/92	5
115	92-50588	HL-9212-907	12/02/92	31
60	93-20279	HL-9305-103	05/22/93	HL-90-2
50	93-20280	HL-9305-102	05/22/93	HL-90-1
159	93-20281	HL-9305-111	05/22/93	D.I. BLANK
50	93-20282	HL-9305-112	05/22/93	HL-90-1
68	93-20283	HL-9305-104	05/22/93	HL-90-3
16	93-20284	HL-9305-100	05/22/93	83-6
26	93-20448	HL-9305-101	05/25/93	EPA-1
94	93-20449	HL-9305-106	05/27/93	MPC-HL-2
88	93-20450	HL-9305-105	05/27/93	MPC-HL-1
113	93-21821	HL-1	05/25/93	28
139	93-21822	HL-3	05/26/93	52
139	93-21823	HL-4	05/26/93	52
142	93-21824	HL-5	05/26/93	59
101	93-21825	HL-6	05/26/93	13
149	93-21826	HL-7	05/26/93	75
97	93-21827	HL-8	11/11/93	5
153	93-21828	HL-9	05/28/93	87
126	93-21829	HL-10	05/28/93	40
115	93-21830	HL-11	05/28/93	31
16	93-59620	HL-9312-100	12/15/93	83-6
26	93-59621	HL-9312-101	12/15/93	EPA-1
50	93-59622	HL-9312-102	12/15/93	HL-90-1
68	93-59623	HL-9312-104	12/15/93	HL-90-3
159	93-59624	HL-9312-107	12/15/93	D.I. BLANK
165	93-59625	HL-9312-108	12/15/93	RINSBLANK
60	93-59626	HL-9312-103	12/16/93	HL-90-2
165	93-59627	HL-9312-109	12/16/93	RINSBLANK

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Page	Sample Number	Lab ##	Date	Site Code
50	HL-9312-102	93-59622	12/15/93	HL-90-1
60	HL-9312-103	93-59626	12/16/93	HL-90-2
68	HL-9312-104	93-59623	12/15/93	HL-90-3
88	HL-9312-105	93-59630	12/16/93	MPC-HL-1
94	HL-9312-106	93-59629	12/16/93	MPC-HL-2
159	HL-9312-107	93-59624	12/15/93	D.I. BLANK
165	HL-9312-108	93-59625	12/15/93	RINSBLANK
165	HL-9312-109	93-59627	12/16/93	RINSBLANK
60	HL-9312-110	93-59628	12/16/93	HL-90-2
19	HL-9404-100	94-13571	04/07/94	83-6
26	HL-9404-101	94-13572	04/08/94	EPA-1
50	HL-9404-102	94-13573	04/08/94	HL-90-1
60	HL-9404-103	94-13574	04/07/94	HL-90-2
71	HL-9404-104	94-13575	04/07/94	HL-90-3
76	HL-9404-105	94-13576	04/08/94	HL-94-1
81	HL-9404-106	94-13577	04/08/94	HL-94-2
88	HL-9404-107	94-13578	04/08/94	MPC-HL-1
60	HL-9404-108	94-13579	04/07/94	HL-90-2
159	HL-9404-109	94-13580	04/07/94	D.I. BLANK
32	HL-9408-100	94-40098	08/24/94	EPA-1
50	HL-9408-101	94-40099	08/24/94	HL-90-1
60	HL-9408-102	94-40100	08/24/94	HL-90-2
71	HL-9408-103	94-40101	08/24/94	HL-90-3
1	HL-9408-104	94-40102	08/24/94	I-1
88	HL-9408-105	94-40103	08/24/94	MPC-HL-1
94	HL-9408-106	94-40104	08/24/94	MPC-HL-2
159	HL-9408-107	94-40383	08/25/94	D.I. BLANK
5	HL-9408-108	94-40379	08/25/94	I-3
151	HL-9408-109		08/25/94	84
103	HL-9408-110	94-40382	08/23/94	13
132	HL-9408-111	94-40762	08/25/94	45
128	HL-9408-112	94-40378	08/25/94	40
7	HL-9408-113	94-40381	08/25/94	INF.GALLERY
3	HL-9408-114	94-40380	08/25/94	I-2
165	HL-9408-115	94-40105	08/24/94	RINSBLANK
151	HL-9409-100	94-47472	09/27/94	84
19	HL-9411-100	94-58154	11/18/94	83-6
24	HL-9411-101		11/21/94	83-7
32	HL-9411-102	94-58155	11/21/94	EPA-1
50	HL-9411-103	94-58156	11/18/94	HL-90-1
66	HL-9411-104	94-58157	11/18/94	HL-90-2
71	HL-9411-105	94-58158	11/18/94	HL-90-3
76	HL-9411-106	94-58159	11/18/94	HL-94-1
81	HL-9411-107	94-58160	11/18/94	HL-94-2
86	HL-9411-108	94-58161	11/18/94	HL-94-3
1	HL-9411-109	94-58166	11/21/94	I-1
3	HL-9411-110		11/21/94	I-2
5	HL-9411-111		11/21/94	I-3
7	HL-9411-112	94-58167	11/21/94	INF.GALLERY
88	HL-9411-113	94-58162	11/21/94	MPC-HL-1
86	HL-9411-114	94-58163	11/18/94	HL-94-3
159	HL-9411-115	94-58164	11/18/94	D.I. BLANK
165	HL-9411-116	94-58165	11/18/94	RINSBLANK
103	HL-9412-100	94-60430	12/08/94	13
117	HL-9412-101	94-60431	12/08/94	31
128	HL-9412-102		12/08/94	40
141	HL-9412-103	94-60432	12/08/94	57
97	HL-9412-104	94-60433	12/08/94	5
145	HL-9412-105	94-60434	12/08/94	62
149	HL-9412-106		12/08/94	75
154	HL-9412-107		12/08/94	92
156	HL-9412-108	94-60435	12/08/94	96
151	HL-9412-109	94-60436	12/08/94	84
155	HL-9412-110	94-61429	12/20/94	93
94	HL-9412-111	94-61430	12/20/94	MPC-HL-2
1	HL-I1	94-17317	04/27/94	I-1
7	HL-IF1	94-16833	04/21/94	INF.GALLERY
46	HL90-2-101	90-2766	02/02/90	HL-90-1
56	HL90-2-102	90-2767	02/03/90	HL-90-2

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60	93-59628	HL-9312-110	12/16/93	HL-90-2
94	93-59629	HL-9312-106	12/16/93	MPC-HL-2
88	93-59630	HL-9312-105	12/16/93	MPC-HL-1
19	94-13571	HL-9404-100	04/07/94	83-6
26	94-13572	HL-9404-101	04/08/94	EPA-1
50	94-13573	HL-9404-102	04/08/94	HL-90-1
60	94-13574	HL-9404-103	04/07/94	HL-90-2
71	94-13575	HL-9404-104	04/07/94	HL-90-3
76	94-13576	HL-9404-105	04/08/94	HL-94-1
81	94-13577	HL-9404-106	04/08/94	HL-94-2
88	94-13578	HL-9404-107	04/08/94	MPC-HL-1
60	94-13579	HL-9404-108	04/07/94	HL-90-2
159	94-13580	HL-9404-109	04/07/94	D.I. BLANK
137	94-16462	HL-1	04/18/94	51
103	94-16463	HL-2	04/18/94	13
132	94-16464	HL-3	04/18/94	45
144	94-16465	HL-4	04/18/94	59
149	94-16466	HL-5	04/18/94	75
117	94-16467	HL-6	04/18/94	31
113	94-16468	HL-7	04/18/94	28
151	94-16469	HL-8	04/18/94	84
97	94-16470	HL-9	04/18/94	5
126	94-16471	HL-10	04/18/94	40
3	94-16831	HLI2	04/21/94	I-2
5	94-16832	HLI3	04/21/94	I-3
7	94-16833	HL-IF1	04/21/94	INF.GALLERY
1	94-17317	HL-I1	04/27/94	I-1
126	94-3391	HL-104H2	01/04/94	40
103	94-3392	HL-104J1	01/04/94	13
139	94-3393	HL-104E5	01/04/94	52
142	94-3394	HL-104S3	01/04/94	59
115	94-3395	HL-104G6	01/04/94	31
149	94-3396	HL-104C4	01/04/94	75
97	94-3538	HL-105C1	01/05/94	5
32	94-40098	HL-9408-100	08/24/94	EPA-1
50	94-40099	HL-9408-101	08/24/94	HL-90-1
60	94-40100	HL-9408-102	08/24/94	HL-90-2
71	94-40101	HL-9408-103	08/24/94	HL-90-3
1	94-40102	HL-9408-104	08/24/94	I-1
88	94-40103	HL-9408-105	08/24/94	MPC-HL-1
94	94-40104	HL-9408-106	08/24/94	MPC-HL-2
165	94-40105	HL-9408-115	08/24/94	RINSBLANK
128	94-40378	HL-9408-112	08/25/94	40
5	94-40379	HL-9408-108	08/25/94	I-3
3	94-40380	HL-9408-114	08/25/94	I-2
7	94-40381	HL-9408-113	08/25/94	INF.GALLERY
103	94-40382	HL-9408-110	08/23/94	13
159	94-40383	HL-9408-107	08/25/94	D.I. BLANK
132	94-40762	HL-9408-111	08/25/94	45
151	94-47472	HL-9409-100	09/27/94	84
19	94-58154	HL-9411-100	11/18/94	83-6
32	94-58155	HL-9411-102	11/21/94	EPA-1
50	94-58156	HL-9411-103	11/18/94	HL-90-1
66	94-58157	HL-9411-104	11/18/94	HL-90-2
71	94-58158	HL-9411-105	11/18/94	HL-90-3
76	94-58159	HL-9411-106	11/18/94	HL-94-1
81	94-58160	HL-9411-107	11/18/94	HL-94-2
86	94-58161	HL-9411-108	11/18/94	HL-94-3
88	94-58162	HL-9411-113	11/21/94	MPC-HL-1
86	94-58163	HL-9411-114	11/18/94	HL-94-3
159	94-58164	HL-9411-115	11/18/94	D.I. BLANK
165	94-58165	HL-9411-116	11/18/94	RINSBLANK
1	94-58166	HL-9411-109	11/21/94	I-1
7	94-58167	HL-9411-112	11/21/94	INF.GALLERY
103	94-60430	HL-9412-100	12/08/94	13
117	94-60431	HL-9412-101	12/08/94	31
141	94-60432	HL-9412-103	12/08/94	57
97	94-60433	HL-9412-104	12/08/94	5
145	94-60434	HL-9412-105	12/08/94	62

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Page	Sample Number	Lab ##	Date	Site Code
3	HLI2	94-16831	04/21/94	I-2
5	HLI3	94-16832	04/21/94	I-3
88	MPC-9205-101	92-16654	05/06/92	MPC-HL-1
94	MPC-9205-102	92-16655	05/06/92	MPC-HL-2

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Page	Lab ##	Sample Number	Date	Site Code
156	94-60435	HL-9412-108	12/08/94	96
151	94-60436	HL-9412-109	12/08/94	84
155	94-61429	HL-9412-110	12/20/94	93
94	94-61430	HL-9412-111	12/20/94	MPC-HL-2